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July 21, 2003 ■ Volume 20, Number 29

NetworkWorld

EXAMINING

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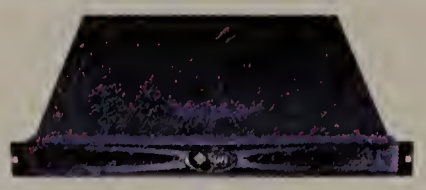

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The Signature Series

Examining you

We investigate your job, salary, future and free time

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Interactive

Are you making what you're worth?

Check out our annual Salary Survey in this week's You Issue, then head online to use our Salary Calculator. Plug in info about your background, skills and job, and we'll tell you what you should make. Note: The data you enter is not stored permanently. It's kept long enough to calculate your expected salary and total compensation. **DocFinder: 6821**

Wireless Wizards

In our newest Fusion-exclusive column, each week our Wizards will answer your tough enterprise wireless questions. This week they help a reader who's wondering how 802.11g should fit into his wireless LAN deployment plans. **DocFinder: 6845**

Mgmt. notes: Vendors working for you

Senior Writer Denise Dubie says: While no one can say these are the best of times, there might be benefits companies can reap in the down economy — especially when it comes to upgrading network management systems. **DocFinder: 6779**

Seminars and events

The New Data Center: Powering the Enterprise

The new data center is the new driving force of the enterprise, rising to take command and control through consolidation and virtualization, automation and efficiency. If your data center isn't fully metered, fully accountable and fully effective, don't miss this Network World Technology Tour event. **DocFinder: 6646**

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Columnists

Compendium

Tracking open source in government

Fusion Executive Editor Adam Gaffin directs you to OpenSector.org — a new site "where public sector decision makers meet the people, projects and principles of the open source software movement to bring the benefits of free software to their constituents." **DocFinder: 6846**

Telework Beat

Both sides of the wire

Net.Worker Managing Editor Toni Kistner says that the acquisition of Linksys gives Cisco more than just small office/home office hardware. **DocFinder: 6847**

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Business software upgrade lessons

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Digital Domicile

Testing new media adapters

Columnist Mike Wolf examines how Prismiq's MediaPlayer Entertainment Gateway delivers PC content to your TV. **DocFinder: 6849**

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News

New apps can be a real pain in the net

■ BY DENISE DUBIE

Newfangled applications such as streaming media, Web conferencing and voice over IP promise lots of benefits, but they also can suck up network bandwidth to the point where these and other programs are practically paralyzed.

Application performance is a big concern and it's getting bigger, said more than 180 *Network World* readers who responded to a not-for-profit e-mail survey we conducted in conjunction with bandwidth management vendor Packeteer (complete survey results can be found at www.nwfusion.com, DocFinder: 6843). Roughly two-thirds said performance of their applications has degraded significantly, and about 43% said slowdowns increased during the past 12 months.

The effect of application-performance degradation varies, but network IT executives said loss of productivity among individual employees and teams is a big concern. They also said poor performance can interfere with revenue-producing activities and hurt customer service.

See Survey, page 16

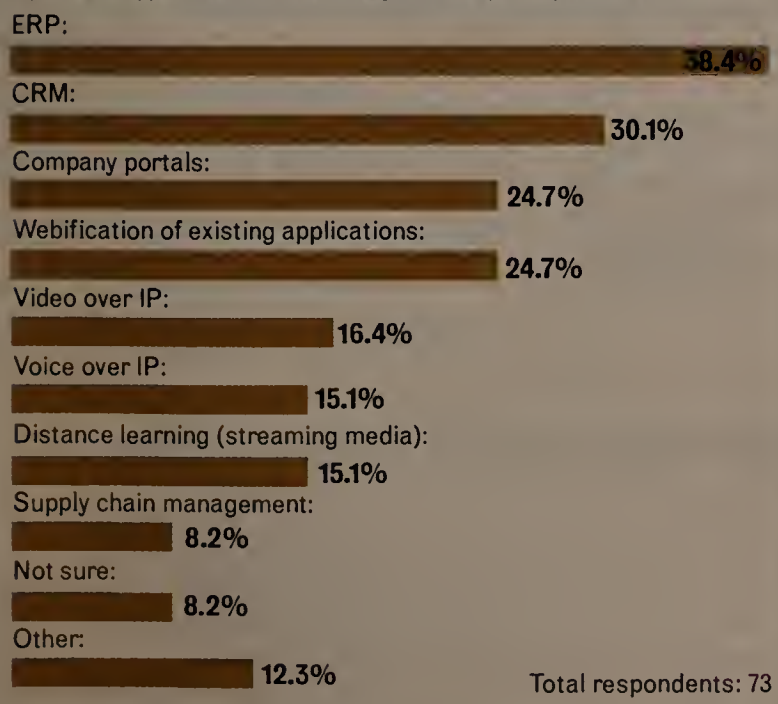
Business on hold

More than one-third of respondents admitted putting off rollouts of mission-critical business applications because of concerns about how the network would perform with the additional load.

Has your company delayed launching new applications or extended the rollout of new applications because of concerns about network application performance?

Total respondents: 181

If yes, what applications have been delayed? (Multiple responses allowed.)



Total respondents: 73

Stopping Intel sprawl

VMware lets users consolidate proliferating boxes.

■ BY JENNIFER MEARS

With an eye toward helping customers save money by consolidating servers, applications and operating systems, a host of vendors are offering systems that combine multiple servers and storage systems into pools of computing power that grow and shrink in response to business demands — a concept known as virtualization.

In addition to products from big-name companies such as HP, IBM, Microsoft and Sun, VMware this week is expected to update its server virtualization software for Intel-based servers.

IBM next year plans to add virtualization support to its pSeries and iSeries servers to help users carve up pieces of CPUs, so that a small application could run on as little as one-tenth of a CPU, says Nick Bowen, vice president of Unix and xSeries server software development at IBM.

Today, partitions can only be as small as a single CPU. In addition, IBM is planning an intelligent workload manager that automatically will detect usage needs, and add or subtract virtual resources on the fly. HP is planning similar features for its servers.

"Then we're going to virtualize the I/O because when you get into the model where you have these relatively small CPUs, you don't need native I/O for all of them," Bowen says. So multiple virtual servers could share Ethernet cards or storage interconnects, for example. "Now you take the virtual capability, and not only do the consolidation, but also really take this on-demand thought to a completely different level," he says.

The idea of turning proliferating Intel boxes into more-manageable shared resources is helping spur the adoption of virtualization technology, analysts say. IDC expects the market for virtual machine software for Intel-based systems to grow from about $30 million today to more than several hundred million dollars by 2006.

"It's certainly hyperbolic for anything on the market today to claim to provide true utility computing," says Gordon Haff, an analyst with Illuminata. "But technology like VMware's virtual machine is going to be part of any broader utility computing down the road."

The major systems vendors seem to agree. VMware has garnered considerable support from Dell, HP and IBM, which sell and support VMware on their Intel servers. The 5-year-old company has a lengthy client list, including CitiBank, Google and Merrill Lynch, and already is profitable, with revenue expected to top $50 million in 2003.

Still, the idea of virtualizing system resources is nothing new. IBM has used the technology in its mainframes for 30 years, and partitioning capabilities have been introduced on high-end Unix machines from HP, IBM and Sun. What is new is the ability to run reliable, secure virtual machines on low-end Intel boxes.

Microsoft's entry into the market, with its acquisition of Connectix earlier this year, is one example of the growing interest in Intel-based virtualization. Connectix Virtual Server isn't expected to be released until year-end, and analysts agree that VMware has a strong lead in the market. However, with the Microsoft threat looming, VMware is focused more than ever on ensuring that its mainframe-class virtualization software evolves to meet the demands of businesses as it moves from its test-environment roots to becoming more of a staple in production platforms.

Pennywise

68%

of respondents at Gartner's Data Center Conference in December said they were able to save money through a server consolidation project.

In that vein, VMware will upgrade its flagship ESX Server 2, which is scheduled to be available this week. Among the enhancements are:

- Support for virtual symmetric multiprocessing (SMP) so that virtual machines can tap two processors. SMP lets multiple CPUs in a network device share the same board, memory, I/O and operating system. SMP support was expected, as the company announced it would implement the technology earlier this year.
- Expanded support for storage-area networks, including the ability to change storage configurations without having to take down and reboot ESX servers.
- The ability to combine multiple network interface cards into a single pool so that if one physical card fails, traffic can be routed to a live card.
- Support for blade servers from HP and IBM, including IBM BladeCenter and HP ProLiant BL20p and BL40p blade servers.
- A new management user interface.

In addition, VMware is introducing a "physical to virtual" tool to make it easier to migrate servers from physical boxes to virtual machines. Further, ESX Server 2 is the first product to take advantage of VMware Control Center, which the company introduced last month and lets users centrally manage and monitor virtual machines, shifting resources as business needs demand them.

The whole idea, analysts say, is to make the VMware technology easier to use, while improving its relia-

See VMware, page 18

News Bits

The final curtain for Netscape browser?

■ AOL appears finally to be pulling the plug on Netscape: Last week about 50 software developers were laid off and some started posting on Weblogs and online discussions that Netscape, the pioneering commercial Web browser, is dead. Part of the code base will live on, in the Mozilla open source browser project. AOL announced last week it would contribute $2 million to the newly created Mozilla Foundation, set up to promote the open source browser and e-mail software.The last major release of Netscape was Version 7.0 last August. Microsoft's Internet Explorer, introduced in the mid-1990s, has held a 90%-plus market share for years. AOL acquired Netscape in late 1998 but couldn't revive its fortune. In May 2003, AOL parent AOL Time Warner settled a private antitrust suit filed by AOL on behalf of Netscape against Microsoft: Microsoft paid Time Warner $750 million, and AOL agreed to a royalty-free license to use Internet Explorer with its AOL online client software.

Microsoft posts healthy financial gains

■ Citing strong growth in its server business and revamped licensing plan, Microsoft last week continued its immunity to the tight economy by reporting fiscal fourth-quarter revenue of $8.07 billion, an 11% increase over the same quarter a year ago.The company also reported total 2003 revenue of $32.19 billion, which was up 13% over the $28.37 billion reported last year.The year included double-digit revenue growth in each of Microsoft's business units, according to company officials. Revenue for the fourth quarter, which ended June 30, was up 11% over the $7.25 billion recorded in the same quarter last year. Microsoft again beat fourth-quarter estimates by Wall Street, which predicted revenue of $7.83 billion, according to analysts polled by Thomson First Call.

PeopleSoft closes J.D. Edwards deal

■ PeopleSoft has closed its deal to acquire J.D.Edwards & Co., purchasing 88% of the outstanding shares of its fellow enterprise software firm and expecting to buy the balance soon.The total value of the deal is $1.8 billion. PeopleSoft has been fending off a hostile takeover attempt by Oracle while it completed the acquisition. Oracle will stay the course, a spokesman said Friday."We believe time is on our side. Oracle remains committed to acquiring PeopleSoft — even with the addition of J.D.Edwards," spokesman Jim Finn said.

IBM/Lotus snaps up Aptrix

■ IBM/Lotus last week acquired Web content management software vendor Aptrix for an undisclosed amount and plans to integrate the Australian company's technology across IBM's collaboration and middleware platform.The software, which helps users create, publish, manage and archive Web-based content, will become part of IBM's Lotus division, and eventually will become the heart of Lotus Workplace Content Development, which is expected to ship before Oct. 1.IBM also plans to integrate the technology with WebSphere Portal and DB2 Content Manager. Rival Microsoft is integrating content management into its forthcoming Jupiter middleware suite, which combines the technology with business integration and e-commerce software.

COMPENDIUM

Ghostblogging

Offering up more proof that Weblogs are now officially mainstream, Don Park provides proof that some corporate muckymuck Weblogs are actually not written by the people whose names are on them: At least one writer ghostblogs for three companies and will soon be hiring writers for the job. ***You can be sure that Adam Gaffin writes Compendium; see more at www.nwfusion.com, DocFinder: 6841.***

TheGoodTheBadTheUgly

Surf's up, all right. A British ISP called Moving Edge is working to provide a Wi-Fi hot spot in a hot spot: the beaches of Brighton. Currently in beta, the service — called PiertoPier — is expected to go live next month. No word on addressing the issue of sand in the laptop. ➤

The price of security. More than half of 1,400 companies polled cited insufficient funds as the top obstacle to protecting their information, according to the 2003 Ernst & Young Global Information Security Survey. "There's a clear disconnect between what organizations define as a major business objective — protecting their information resources — and where they allocate funding," says Mark Doll, Americas Director of Ernst & Young's Security Services.

BRIAN GAIDRY

Leggo my Legato. What would an industry merger be without a lawsuit or two? (See HP-Compaq, Oracle-PeopleSoft-J.D. Edwards.) The latest skirmishes involve Legato Systems and its shareholders. The shareholders have filed two suits in an effort to block EMC's planned $1.3 billion takeover of the storage management company. Charges against Legato and its board include "breach of fiduciary duty and self-dealing." Legato, predictably, says the suits are without merit.

European official sees united anti-spam effort

■ The chair of the European Parliament's European Internet Foundation last week said she believes the U.S. Congress and its European Union counterpart will create an agreement to prosecute spammers across international borders.The U.S. and European Union stand at a critical juncture for fighting spam, as the U.S. Congress considers anti-spam legislation and the European Commission this week has promised concrete action on spam by late this year, said Erika Mann, a member of the European Parliament from Germany. Mann was among a group of nine members who talked to congressional leaders and U.S. federal agencies in Washington, D.C., about working together on technology issues."If you don't get international agreement on this issue, you will never solve it," Mann said during an interview after a press conference with members of the Congressional Internet Caucus."We want to go after [spammers] who are operating illegally."

Bill would make single copyright violation a felony

■ Two congressmen have introduced a bill that would make a single unauthorized upload of a copyrighted work, such as a song, a federal felony. One critic is calling the legislation "ridiculous." Reps. John Conyers Jr., (D-Mich.) and Howard Berman (D-Calif.) introduced the "Author, Consumer, and Computer Owner Protection and Security Act of 2003" last week. Saying that a single upload to a peer-to-peer file-sharing site could cost the copyright owner thousands of dollars in lost revenue, the bill clarifies that the uploading of one copyrighted work meets the 10-copy, $2,500 threshold for felonious copyright infringement in U.S. copyright law.

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Avaya's new firewalls speak VoIP

Vendor's new, revamped gear lets users send IP calls through secure network boundaries.

■ BY PHIL HOCHMUTH

Avaya this week is expected to launch several security gateways that promise to let customers more easily support IP phone calls through firewalls.

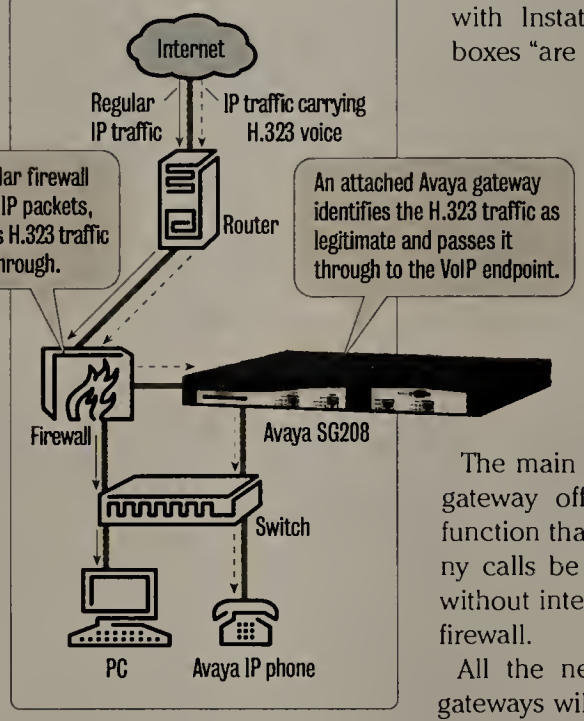
Support for the H.323 voice-over-IP protocol in Avaya's SG5/5X and MG200 series firewall/VPN gear could help make VoIP deployment to remote offices more secure and less frustrating to install, the company says. The new gear could work with existing VPN/firewall equipment or be used to set up a security infrastructure from scratch, the vendor says.

Avaya is adding H.323 support for its existing SG5 and SG5X telecommuter security boxes and its MG200 firewall/VPN gateway branch offices. Avaya also is launching the new MG203 and MG208 firewall/VPN gateways for adding H.323-capable security to regional and central sites.

Many experts say H.323 traffic generally does not travel smoothly through firewall devices or routers using network address translation (NAT), which masks the IP addresses of users behind a router. In the past, users had to leave open ports in corporate firewalls to allow VoIP traffic, such as IP phone calls or Microsoft NetMeeting conferences, into a corporation. Avaya says its new H.323 application proxy can open and close firewall ports on the fly (without requiring administration), letting IP calls pass through securely without leaving open back doors to the network. The proxy function can negotiate IP and H.323 addresses across NAT devices. Avaya's IP telephony gear is based on a proprietary call-control and feature-control protocol based on H.323.

VoIP gatekeeper

Avaya's new line of firewall/VPN gateways support H.323 firewall proxies, letting VoIP calls traverse regular firewalls and network address translation boxes securely, the vendor says.



While the new gateways might not replace security infrastructures already in some large networks, they could be integrated into companies rolling out Avaya-based IP telephony, one analyst says.

"Running [VoIP] through firewalls isn't something that's easy to do," says Jaclynn Bumback, a research analyst with Instat/MDR. The SG200 series boxes "are definitely products Avaya customers are going to need" if they are deploying IP telephony at remote sites with firewalls, she says.

Firewall vendors that have announced support for H.323 include Cisco, Check Point and NetScreen Technologies.

The main ingredient in Avaya's new gateway offerings is a H.323 proxy function that can let Avaya IP telephony calls be placed over the Internet without interference from a corporate firewall.

All the new and revamped Avaya gateways will support the H.323 application proxy.

The SG5 and SG5X are new versions of Avaya's former VSU-branded firewall/VPN gateways for home office workers. Both boxes provide up to 2M bit/sec of Triple-DES IP Security performance, and can let up to five machines sit behind the box and attach securely to an Avaya-based VPN. The SG5X includes an eight-port LAN switch, while the SG5 has two Ethernet interfaces.

The SG200 gateway, aimed at small branch offices, has 50M bit/sec of stateful packet inspection firewall horsepower and 10M bit/sec of Triple-DES VPN encryption. It can support up to 150 site-to-site IP Security (IPSec) VPN tunnels and 500 remote access VPN clients.

The SG203 and SG208 are targeted as regional and central office VPN/firewall devices for companies. The SG203 can perform 90M bit/sec of packet inspection for 200,000 concurrent sessions, and the SG208 firewall performance is 600M bit/sec for 300,000 sessions — about as fast as mid-level to high-end security products from vendors such as Cisco, Nokia (Check Point) and Nortel. The SG203 can support 300 site-to-site VPN tunnels, while the SG208 can go up to 1,000 tunnels. The SG203 comes with 10/100M bit interfaces for WAN and LAN, while the SG208 supports Gigabit Ethernet.

Sending IP telephony calls between sites over an Internet link "can be easier to configure and less bandwidth-intensive," says David Lover, director of technical services for Cross Telecom, an Avaya reseller, and user of the SG200 series gateways. However, he adds that running VoIP over a point-to-point link or encrypted VPN tunnels — instead of over the Internet — is more widely used and can provide better control over security.

Another Avaya user agrees.

"We connect VoIP to our offices over point-to-point frame [relay]," says Ken Suyenaga, a systems analyst with the Salvation Army in the San Diego area, where Avaya's IP 600 IP PBX and phones are used. "The [VoIP] firewall issue isn't really an issue for us," he says.

All three of the SG200 series boxes also include slots for adding functionality with PC cards. Upgrade cards are available from Avaya and can be used to boost support for encryption levels and the number of tunnels supported. Avaya says it will later have a PC card that will let the gateway act as a wireless LAN VPN termination device, which could let Wi-Fi data and voice clients in an office attach securely to the LAN through an internal IPSec connection.

The SG5 and SG5X cost $700, while the SG200 is available for $1,700. The SG203 and SG208 are available for $7,000 and $14,000, respectively. ■

Start-up sets stage for tighter security

Offering designed to block unauthorized network sessions before they start.

■ BY TIM GREENE

Start-up Trusted Network Technologies is preparing an upgrade to its unique authentication and access-control offering that could prompt businesses to rethink their use of firewalls.

TNT's Identity consists of an agent called I-Host that runs on PCs and servers, an appliance called I-Gateway that enforces authentication and access policies, and software dubbed I-Manager with which administrators set access policies.

Identity works by setting and enforcing policies that link users to network assets. I-Host embeds in each packet a unique identifier based on users' identities and the identity of the machine being used. I-Gateway sits on the network in the traffic stream, reads the identifiers and enforces policies to allow or deny sessions as they are requested. I-Manager is browser-based software with a graphical user interface for setting policies and managing and gathering activity audits.

All this is done within standard TCP/IP packets without adding overhead or altering network infrastructure, the company says.

An I-Gateway placed in front of a firewall can block unauthorized traffic before it reaches the firewall, says TNT CTO David Shay.

The University of Georgia College of Pharmacy in Athens is considering Identity to protect key administration applications in its network, says John Anderson, management information specialist. The two-factor identification tied to a specific person and a specific machine is potentially less vulnerable to spoofing attempts than a firewall, Anderson says. IP addresses are susceptible to spoofing if a hacker within an organization puts a legitimate IP address on a nearby machine on the same network to exploit internal firewalls, he says.

He is concerned that the Identity system is vulnerable to session hijacking, in which a hacker takes over an established session after I-Gateway has

See Trusted, page 18

PROFILE: TRUSTED NETWORK TECHNOLOGIES

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Founded:	2002
Founders:	CEO Stephen Gant; Executive Vice President of Sales and Operations Derek Gant; CTO and Vice President of Engineering David Shay.
Funding:	$6M from Charles River Ventures and Flagship Ventures.
Employees:	Less than 50.
Product:	Identity access control and authentication hardware and software.
Competitors:	Traditional authentication vendors such as Rainbow Technologies, RSA Security and Vasco.

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Don't leave home without RFID

American Express expands radio payments test.

■ BY JOHN COX

American Express is expanding a wireless payment scheme to 175 retail locations in the Phoenix area, in a test designed to confirm whether the radio technology can pay off at the cash register.

The company's ExpressPay uses a radio frequency identification (RFID) chip in a key-chain tab. Waving the tab at a distinctive scanner triggers the chip, which transmits encrypted credit card data. Initial beta tests by the card company last year showed that users could pay for a sandwich or milk shake up to 40% faster than by using cash, says a spokesman for the New York credit card company.

Another key point for retailers is the beta test found that users spent about 20% to 30% more on average in each purchase than when using cash.

Those kind of results catch the attention of executives in a whole lot of retail outlets, such as fast-food restaurants, supermarkets and drugstores, says David Krebs, who tracks RFID technology for Venture Development, a market research company.

"[If confirmed,] those are very attractive results," he says. "Speed of checkout is a huge concern for retailers. The number of customers that one employee at a cash register can process is a key metric for retailers. They're trying to manage and minimize labor costs."

To put ExpressPay to the test, the card company has set up RFID scanners at Dairy Queen ice cream shops, Carl's Jr. fast food restaurants, Kwik Kopy Printing shops and other retailers throughout greater Phoenix, stocking each site with explanatory brochures and application forms, according to American Express spokesman Tony Mitchell. The company would like to convince about 30,000 people in the Phoenix area to use the wireless payment option.

There are roughly 4,000 ExpressPay users in the area now, but most of them are American Express employees. They began using the radio tag during the beta test last year, at cafeteria's in the company's Phoenix and later New York City campuses.

The RFID tags are from Texas Instruments.

The new American Express ExpressPay keychain tag uses RFID technology, enabling consumers to wave the device at a diamond-shaped scanner when purchasing items on credit.

They use a 13.56-MHz radio chip, which allows for a very small, flat device, says Bill Allen, marketing communications manager for Texas Instruments' RFID Systems Division. The chip is embedded on a thin plastic film, and the antenna is etched onto the film. American Express is using, in both tag and reader, the ISO 14443 standard for "contactless proximity cards." The standard specifies the radio frequency, air interface and other protocols, including security protections.

ExpressPay encrypts the data being sent from the key-chain tag to the scanner. A random number generator changes the security code to avoid having it repeat, making it even harder to decipher.

The ISO 14443 security, coupled with the fact that ExpressPay is, in effect, just a personal credit card in a different form, seems likely to defuse arguments by privacy advocates, warning about the danger of RFID "spy chips."

Wal-Mart's recent decision (see www.nwfusion.com, DocFinder: 6840) to cancel a one-store RFID trial using scanners on store shelves and RFID chips tucked into Gillette razor packages, was hailed as a victory by privacy advocates. The advocates say Wal-Mart canceled the project because of an outpouring of consumer protests. A spokesman for the chain says the company is focusing on using RFID in its distribution centers. ■

EMC formalizes plan for pay-by-the-drink storage

■ BY DENI CONNOR

EMC this week is scheduled to formally announce a program aimed at taking the guesswork out of buying storage, by letting customers pay only for the gigabytes of capacity used.

The OpenScale program, first reported on by *Network World* in May, has been available to select customers since 1999. But now the service is generally available to users of EMC hardware such as Celerra, Clariion and Symmetrix, and software such as Symmetrix Remote Data Facility and TimeFinder.

"We chose OpenScale because it gives us flexibility in our demand for storage," says Eric Eriksen, CTO for Deloitte Consulting in Philadelphia. "It lets us do storage-on-demand at our facility and takes some of the guessing out of our acquisition of storage. If a client needs a certain amount of disk, we can have it ready the next day or the day after" Deloitte has an EMC Symmetrix system with 80 terabytes of storage.

EMC measures a customer's use of storage assets, Fibre Channel switch ports, network attached storage servers and storage software via an Online ControlCenter agent that communicates with a billing system.

EMC, as well as rivals such as HP and IBM, has offered assorted storage-on-demand programs over the years whereby customers can turn on chunks of storage capacity and notify the vendor that they have done so. What is different about OpenScale is the automation of the process through the company's Online ControlCenter, analysts say.

"This is the first time a vendor has combined storage-on-demand with technology that can audit use," says Brian Babineau, an analyst with Enterprise Storage Group.

With Online ControlCenter, a server or workstation is placed at a customer location that monitors usage and performance information. This server, called the Collector, polls storage devices for usage, gathers the information and feeds it to a data warehouse at EMC. It is then automatically transferred to EMC Global Finance so invoices can be generated based on the usage pattern.

Pricing is based on the amount of storage a customer uses and is negotiated on a per-customer basis. The company expects to set standard pricing by year-end. ■

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DocFinder: 6844

Corrections

■ The story "Proxim struggles continue despite WLAN popularity" (July 14, page 10) should have stated that Warburg Pincus owns more than 80% of Proxim's convertible preferred stock, in addition to 22% of the outstanding common stock, according to Proxim. Preferred stock gives the holder a claim on earning and typically also on assets before the claim of common stockholders.

■ The story "Starbucks gets win-win from Wi-Fi" (July 14, page 1) should have stated that the Starbucks Wi-Fi VPN project is in limited trials. Also, McDonald's should not have been included as a company which has wireless hot spots as part of a T-Mobile roaming network.

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Users question on-demand computing

Computer Associates touts its managing on-demand strategy to attendees of CA World.

■ BY DENISE DUBIE

LAS VEGAS — About 10,000 IT professionals flocked to Computer Associates' annual customer conference last week, where the company discussed plans to develop software that manages IT resources automatically.

But show attendees said CA first needs to better explain what it means by so-called on-demand management before they'll buy.

CA World attendees heard the company outline its strategy to manage enterprise network resources automatically and also heard CA's plan to roll out new features across its network, security, storage, portal and application development product lines. The news comes after similar announcements from competitors HP and IBM.

Meta Group Senior Analyst Corey Ferengul says customers should expect to see baby steps in product upgrades from all the vendors until at least next year.

"Right now, on-demand or utility computing is still very much a vision," he says. "There are bits and pieces that users can deploy today and get some value."

CA unveiled software called Sonar that is expected to be embedded in products next year. It will watch application traffic and ping devices to understand what underlying network components any given application touches when responding to a user request.

The company also announced new features across its Unicenter network and systems management platform, and announced products to manage storage and security.

While analysts say the new technology and incremental feature upgrades put CA on the right track, customers say they don't know enough about what CA is doing to decide if they will move to on-demand computing.

"The strategy makes sense because it's true: You do need different processing power at different times," says Karl Jackson, systems management engineer at Brigham Young University in Provo, Utah. "I can see how resources could be automatically allocated, but how they are going to be able to be pulled once the need is gone, I don't know."

Jackson uses Unicenter network and systems management software at Brigham Young, and the university recently began rolling out CA's eTrust software to automate parts of security access control, administration, audits, firewalls and intrusion detection. With between 60 and 80 Unix and 200 Windows servers, automation software is necessary for him to keep the network up to speed and supporting 30,000 students and faculty members, he says.

But with such a network, Jackson says that any type of software that automatically would take actions would require extensive input from users before they could trust it to manage their networks.

"The big problem with the strategy is that it forces businesses to define their processes, like 'When do we need to build a new box? And what do we need to put on it?' " Jackson says. "There is a lot to be defined, and it's a huge undertaking."

Dick Gorman, senior enterprise storage specialist at Blue Cross Blue Shield of Kansas in Topeka, agrees that automating IT tasks across enterprise networks is necessary and daunting. He uses CA's BrightStor Storage Resource Manager software to track IBM's Tivoli Storage Manager and to back up Lotus Notes, and he uses Hitachi storage devices to handle data from a mix of 1,900 Unix and Windows servers. He says he'd like to virtualize his storage farms, but doesn't see how any vendor — CA included — could visualize all his storage resources now.

"I don't know how any product could do that because they don't show the overall view of the [direct access storage device initialization] farm," Gorman says. "There are so many different platforms and they are so different from one another, I don't know how they will be able to treat them the same and carve them up."

Yacov Almoznino says he and his IT staff at the Israeli National Police in Jerusalem have started to enjoy benefits of automating IT tasks with the help of CA software. Almoznino, the head of the distributed infrastructure unit at the technological bureau, says he enlisted the help of several application and systems engineers to write down every part of a process so a member of the network team could create a business process view within CA's software.

"A year ago we were blind to the details of how our systems worked together. The resources they used were not transparent to us," he says.

Business process views are a feature in several management products, including CA's Unicenter. The feature shows IT administrators exactly what application, system and network components — and end users — are affected by a network failure. Almoznino and his team have worked for about 10 months incorporating the business process views into more and more applications, and he says they don't expect the work to stop. ■

Products on demand

Among the new offerings from CA are these that help track Web services, automate storage and identify vulnerabilities.

Product	What it does
Unicenter Web Services Distributed Management	Software that monitors the communications between applications and components that make up Web services to ensure the services are responding and meeting preset thresholds.
BrightStor Process Automation Manager	Software that allocates and provisions storage resources across multiple platforms by using best-practices templates for processes such as policy-driven backup and disaster recovery.
eTrust Vulnerability Manager	Appliance that tracks and monitors network and security devices to pinpoint vulnerabilities that pose a threat to enterprise IT environments.

Sprint dips toe into MPLS waters

■ BY DENISE PAPPALARDO

Putting aside a long-held view that Multi-protocol Label Switching is not a technology it needs, Sprint now says it will introduce an MPLS-based VPN service by year-end.

Sprint backpedaled on its anti-MPLS stance last week during an analyst briefing where Barry Tishgart, director of dedicated data services, said the company is "looking into MPLS."

Sprint confirmed the shift afterward, but gave few details.

"There are customers that desire a standard [RFC] 2547 VPN. We recognize that we should add that functionality to speed up our sales cycle and close deals faster than we are today," says Peter Parish, director of product marketing.

MPLS is an IETF standard used to prioritize traffic to avoid network congestion or failures. AT&T, Equant and MCI (legally known as WorldCom) have deployed MPLS in some form.

"Sprint's VPN services aren't lacking compared to others in the market," says Brownlee Thomas, an analyst at Forrester Research. When asked if users are walking away from the table simply because Sprint is not supporting MPLS, Parish says, "most of the time that's not the case."

Then

"[MPLS is a] solution looking for a problem,"

Barry Tishgart
Director of dedicated data services, Sprint, September 2002

Now

"We said we don't see the need for MPLS in the core of our public IP network, but we do see a need in the market,"

Peter Parish
Director of product marketing, Sprint

It's an issue of how long it takes to explain to a potential customer how Sprint's current Network IP VPN or its Layer 2 Tunneling Protocol v3 services meet user requirements, he says. (For more news on Sprint, see page 29.)

But just 10 months ago, Sprint's anti-MPLS stance seemed rock solid. Tishgart called MPLS a "solution looking for a problem" at NetWorld+Interop in Atlanta. Sprint has maintained that MPLS only would add complexity to its network, and that its abundance of bandwidth eliminates the need for MPLS traffic engineering at the core.

While analysts generally agree that Sprint's network architecture works as well or better than an MPLS-based architecture, the carrier is giving in to market pressure.

"My guess is that they got tired of fighting it," says Steve Taylor, principal at consulting firm Distributed Networking Associates and publisher of Webtorials.com.

"They may be right, that they don't need [MPLS], but at some point it's a lot easier to offer the service than it is to continue to explain why you're not offering it. Sprint was spending way too much time and energy explaining something that didn't matter," he adds.

Sprint isn't conceding that it has fully retreated, either.

"Has Sprint done an about-face on MPLS? We wouldn't say that's the case," Parish says. "We said we don't see the need for MPLS in the core of our public IP network, but we do see a need in the market."

Sprint says it will introduce an edge-based MPLS service. While few details were available, Parish says it should be available in the fourth quarter. ■

Wave Three expands SIP video reach

■ BY JASON MESERVE

Wave Three Software is looking to lower the cost of multi-point videoconferencing with a new software-based application suite that uses Session Initiation Protocol and runs on commodity hardware.

Expected to be announced this week, Session Conference Server suite lets multiple users participate in the same call with audio, video and data-sharing capabilities. The suite includes three modules: Conference Management, which handles call reservation and general network administration; Call Control, for setting up and tearing down the call; and Multimedia, which pushes any images and files being shared to each user. The suite can run on a single Windows 2000 server or be spread over multiple locations, depending on the number of users being supported.

Session Conference Server works with Wave Three's SIP-based Session software client that runs on Windows and Macintosh. No special hardware is required on the client other than a standard Webcam and microphone/headset. Many SIP audio phones also can be used.

"Being all software, the whole package is a much less-expensive way to get into SIP video," says Christine Perey of Perey Research and Consulting. "This is something a company could buy to establish or prove SIP video [instead of buying] a Marconi [hardware device] at $10,000 an endpoint."

Though Session Conference Server competes with Microsoft's SIP-based Windows XP Messenger, Wave Three says it hopes the products will be able to coexist. A Session and Messenger client can communicate in audio-only mode, but Wave Three is working with Microsoft on video interoperability.

The University of Arkansas School of Medicine in Little Rock is beta-testing Session Conference Server in hopes of improving communications on its campus. The school looks to roll it out fully in September, says Mark Clark, director of technical operations.

Clark says the Session video codec, which uses wavelet compression running at 320-by-240-pixel resolution was comparable in quality to the school's current H.323-based video network. The 640-by-480 resolution (currently in beta) "looks like digital TV," Clark says.

"I took their product, set up a Dell with a fast processor and good sound card, hooked it to a large flat-screen TV monitor with a good set of speakers and for $5,000 got the equivalent [quality] of a $15,000 Tandberg unit," Clark says. "With hundreds of sites, that's a great savings."

The system is being tested with researchers, doctors and clinicians on campus and those traveling. Clark says he hopes to be able to let faculty and staff install the client at home. The client can connect at a minimum of 56K bit/sec, though video quality does suffer.

Wave Three is finishing work on an H.261/H.263 codec that will let the server and client connect with traditional video endpoints from Tandberg and Polycom, letting a session client connect with virtually any videoconferencing device.

An implementation for 10 simultaneous users is priced at about $1,500 and includes a Session Conference Server, the Session desktop software, a Ridgeway server for firewall and network address translation issues, and a SIP location server from Indigo or Snom Technologies. ■

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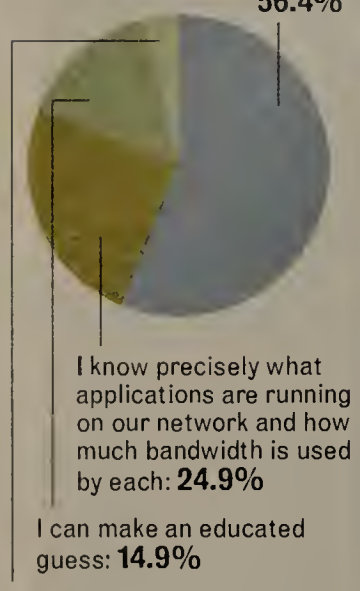
Application anxiety

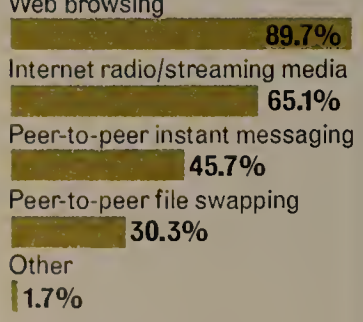
Unsanctioned applications present a huge challenge to network IT executives.

Which of the following statements best describes your level of knowledge about applications running on your network?



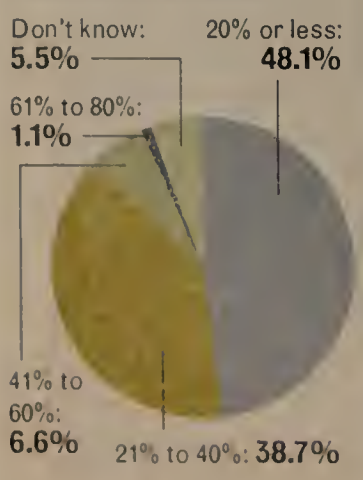
Total respondents: 181

What type of unsanctioned or recreational applications run over your network? (Check all that apply.)



Total respondents: 175

What percentage of total traffic would you estimate is from unsanctioned applications?



Total respondents: 181

Survey

continued from page 7

What's more, one in three respondents said their company has held off on deployments of ERP, CRM, portal and other applications because they were concerned about performance.

Identifying the problem

One challenge in addressing performance issues is that problems involve sanctioned and unsanctioned applications, the latter of which include Web surfing, peer-to-peer file sharing and instant messaging (see graphic, left).

Another issue is that companies often don't have a good handle on just which applications are on their networks. Only one in four respondents said they know precisely what applications are running and how much bandwidth they consume. Nearly 39% said they estimate that unsanctioned programs account for between 21% and 40% of total traffic.

When it comes to which part of the IT infrastructure is at the root of application performance problems, there's plenty of blame to go around. Asked to rate the importance of four areas in this regard on a scale of 1 to 5 (with 1 being not important and 5 being very important), here's what respondents said:

- Servers: 4.07.
- Applications, architecture deployment: 4.07.
- LAN network: 3.80.
- WAN network: 3.75.

Finding a fix

Despite growing concern about application performance, most companies appear to be stuck in a reactive mode, addressing problems only after end users and customers pipe up. Even with network monitoring tools in place, a staggering 72.6% first learn about performance problems from end-user calls to the help desk, and another 82.3% said employee complaints usually are the first they hear of slowdowns on their networks.

"Most of the systems we've had typically were telling us what happened after the fact. We wanted new systems to give us a bit of warning," says Mordecai Sabo, a systems engineer with the distributed infrastructure unit in the technological bureau at the Israeli National Police in Jerusalem.

The organization recently began rolling out new features in Computer Associates' Unicenter network and systems management software that Sabo says will help the network team improve the reliability of critical applications. "The software can help us understand better what happens when a server goes down, and to know what else is affected by the outage," Sabo says.

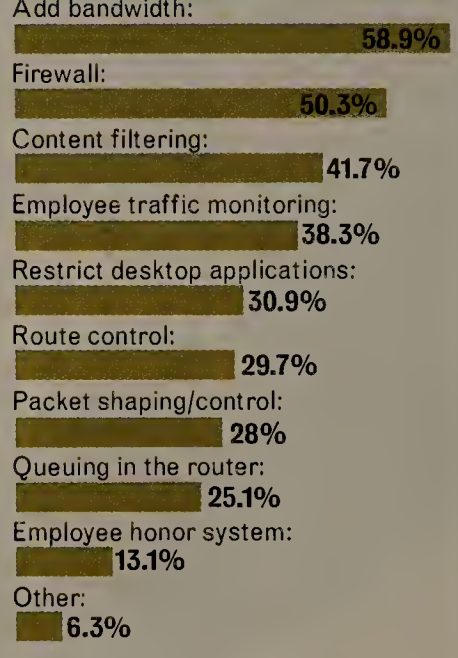
Not surprisingly, close to two-thirds of respondents said they are somewhat, less than and/or not at all satisfied with their current network monitoring tools.

Network executives said they are taking a variety of actions to ensure applications run smoothly (see "Plans of attack," above). Adding bandwidth ranked as the most popular fix, with about 60% of respondents saying they planned to beef up their WAN capacity to handle more-demanding applications. ■

Plans of attack

Companies are taking a host of approaches to prevent networks from melting down when new applications are rolled out.

How does your organization plan to ensure that business applications over your WAN get the necessary bandwidth to perform predictably and efficiently? (Check all that apply.)



Total respondents: 175

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Vendors tout their solutions to spam

■ BY JOHN FONTANA

IronPort Systems and Tumbleweed Communications separately are targeting corporate customers with network appliances designed to manage e-mail traffic and fight spam.

IronPort next month is scheduled to ship its new C60 appliance with a combination of the company's high-speed messaging gateway and Brightmail's Anti-Spam software.

Also this week, Brightmail is set to release Version 5.0 of its spam-blocking technology, which features the ability to identify spam based on URLs embedded in messages, near real-time creation of blacklists and a new signature technology that extracts random characters from e-mail to expose messages as spam.

IronPort's C60 gateway, which comes in a 2U chassis, and has a policy-management engine and Mail Flow Monitor. It also has a spam-blocking engine that employs Brightmail's Probe Network to increase accuracy, and perform content and source filtering on e-mail before it reaches Simple Mail Transfer Protocol-based servers such as Microsoft Exchange and Lotus Domino.

Tumbleweed last week began shipping its Messaging Management System (MMS) — Appliance Edition, an e-mail firewall that offers message filtering and management, and includes the company's Dynamic Anti-Spam Service. Tumbleweed is aiming the appliance at midsize organizations.

"Appliances make sense when you have a [single-function] application like e-mail," says Dan Kelson, an analyst for Delphi Group. "If companies have things cobbled together for mail they can consolidate to an appliance and make things less complex."

Such has been the case at Cisco, which runs the C60 and handles a volume of e-mail that can reach 20 million messages per day.

"The appliance concept is strong when dealing with remote sites," says Bailey Szeto, postmaster at Cisco. The appliance is easier to manage than a Sendmail message transfer agent, which requires a server, an operating system and routine patching, he says. Cisco uses Sendmail, the e-mail gateway software that dominates the Internet, on its network, but customizations on the software require a team of three or four people to maintain. Szeto says ease of management made the C60 appliances attractive for remote sites.

For the C60, IronPort has developed Reputation Filter, which is integrated with the company's SenderBase database, a "credit-rating" system that helps determine which of the most prolific senders of e-mail are likely spammers. Working in conjunction with the Brightmail software, Reputation Filter can offer a history of e-mail senders' activity based on their IP addresses and limit the number of messages that senders can deliver through the gateway. The filter also helps in enforcing mail delivery policies. Meanwhile, Brightmail examines the actual messages to determine if they are spam.

"Classifying senders is what's needed," says Tom Gillis, vice president of marketing for IronPort. "Would a corporation open its lobby and just let anyone enter and wander around the halls?"

The C60 starts at $25,000. The anti-spam capabilities cost $7 per user.

Tumbleweed also has taken the appliance approach with its MMS-based e-mail firewall, which includes the company's Dynamic Anti-Spam Service. The firewall also provides anti-virus, e-mail policy management, encryption and relay capabilities.

"Having everything centralized eases administration and maintenance," says Conal Gallagher, director of systems for InstallShield Software, which has used the MMS engine for three years. The developer of automated software-installation technology recently added Tumbleweed's Anti-Spam Service to create a system similar to Tumbleweed's MMS. The heuristics-based spam-analysis engine is constantly updated much the way anti-virus software is updated with new virus signatures.

Tumblweed's appliance comes in one-CPU or two-CPU versions in a rack-mounted 1U chassis. It runs on Windows 2000 and SQL Server. Pricing starts at $8,000. ■

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Cisco warns of vulnerability in IOS

BY PAUL ROBERTS

Cisco last week warned of a widespread and serious flaw in its IOS operating system that could make devices vulnerable to a denial-of-service attack.

The flaw affects a range of Cisco devices that run IOS and accept data packets using IPv4, including Cisco's popular Catalyst family of switches, 7300 series routers and Aironet family of wireless access points.

Cisco devices are configured to accept IPv4 traffic by default, the company says. A specially crafted sequence of IPv4 data packets sent to a device running a vulnerable version of IOS can cause the device to stop processing traffic. The unique sequence of IPv4 packets shuts down the Cisco devices by causing them to incorrectly designate the targeted device interface as full. Once flagged as full, the interface — for example, an Ethernet interface processing network traffic — will stop processing incoming traffic.

The IPv4 packets could be sent, in sequence, to each interface on an affected device, shutting down those interfaces and rendering the device inaccessible to administrators who need to access it remotely, the company says. The packets can be sent directly to the vulnerable device, without requiring authorization by the attacker. After the attack, Cisco devices must be rebooted to clear the blocked interface, Cisco says.

In addition, devices under attack will not issue warnings or alarms, nor will they automatically reboot to correct the problem when the targeted interface has been marked full. The lack of warning could let an attacker silently cripple an organization's network by taking out the key Cisco hardware that ties that network together.

Cisco dominates the worldwide market for network gear such as switches and routers, and its products are among the most commonly used on the Internet and within corporations. Cisco and CERT encouraged organizations with Cisco hardware running the affected versions of IOS to obtain and apply a software patch from Cisco.

Security company Internet Security Systems (ISS) issued an alert to its customers notifying them of the flaw and recommending that they patch vulnerable systems as soon as possible, according to Dan Ingevaldson, engineering director for ISS X-Force. The company heard rumors about the flaw late last week, as Internet backbone providers and ISPs were contacted by Cisco about the flaw and announced unscheduled maintenance for their networks, he says.

While critical systems such as those Internet backbone providers use are likely to be patched quickly, it might take some time for midsize and large companies to update IOS on the hundreds or even thousands of Cisco devices that tie together their networks, he says. ISS also is concerned about the sheer volume of different IOS patches Cisco listed in its 15-page advisory, Ingevaldson says.

Cisco had to create different IOS updates for the dozens of versions of the operating system it supports.

Roberts is a correspondent at IDG News Service's Boston bureau.

Trusted
continued from page 10

let it be set up.

Shay says I-Host monitors the state of established sessions to prevent hijacking.

I-Gateway also protects networks from hackers by dropping the unauthorized session requests they use to probe networks, says TNT CEO Steve Gant. When hackers get no response, they interpret that as having probed an empty network segment, says Gant, a former vice president at Internet Security Systems.

"They play within the world of TCP/IP to do some subtle tweaks to make your network invisible to hackers," says Dan Keldsen, director of IS at consulting firm Delphi Group. He says he knows of no other commercial security products that do what TNT says Identity does.

"To a certain extent, you have to take their word for what they do," he says, because the company won't fully explain how its technology works while it applies for patents.

Gant says the current Identity gear protects data at rest, but the next version also will protect data as it is being transported.

So end devices running I-Host could establish a secure session between themselves without an intervening I-Gateway and choose from standard methods for encrypting the session, Shay says. "I'm talking about an open infrastructure supporting end-to-end [privacy] and individualization of their own tunnels.... No more VPN gateways," he says.

Identity appliances come in two versions, supporting 10/100 Ethernet for $9,000 and Gigabit Ethernet for $20,000. Per-user costs are extra. ■

VMware
continued from page 7

bility as businesses in growing numbers consider bringing the virtualization software into their data centers.

Healthcare IT services firm McKesson had consolidated on Unix boxes and mainframes, but was watching the number of its Intel servers spiral upward.

"Utilization rates across those resources were not anywhere near what you can achieve on other platforms," says Dave Moffitt, director of engineering at McKesson in Rancho Cordova, Calif.

As a result, Moffitt began a mission about a year and a half ago to find a way to consolidate applications on Intel servers the way he could on mainframes and Unix boxes — without the worry that errant applications would bring each other down.

"The mainframes have had [virtualization capabilities] for years and it's proven to be a very solid and very efficient way to use what is a fairly expensive piece of iron. Unix was a little later to the party, but Sun and IBM both offer the equivalent of mainframe [logical partition] technology," Moffitt says. "So the question was who does this well in the Wintel space?"

Moffitt says he found his answer with VMware. Despite initial concerns about having a single point of failure — if the physical box goes down, multiple virtual machines are knocked out — Moffitt says things have run smoothly and he expects to move more servers onto the VMware product.

Today, McKesson has consolidated about 45 or 50 stand-alone servers — many of them older boxes that he wouldn't have upgraded otherwise — on a pair of IBM x440s. He declined to be specific about cost savings, but says "companies should definitely look to the advantages that VMware may bring to their bottom line."

Alan Thomas, senior technical consultant at National Gypsum in Charlotte, N.C., says the improved user interface of ESX Server 2 will be a big plus in his data center, where about 50 stand-alone servers have been consolidated onto three eight-processor IBM x440s running ESX Server.

"The new interface is a lot faster, and it's easier to manage," he says.

National Gypsum runs everything from Web servers to electronic data interchange servers, and specialty applications on the virtual machines, which have let the company slash monthly hardware maintenance costs by about one-third. Thomas says he plans to consolidate more Intel servers onto virtual machines, and the dual-processor capability will let him do that.

"The fact that you can do two [processors] now really opens up another world," Thomas says. "Not all applications are suited for single-processor virtual machines. But most everything can run fairly well on a dual processor."

In addition to looking to VMware for consolidation, Thomas uses the virtual machine technology, which creates files that contain operating systems and applications, as part of his disaster-recovery efforts.

"The biggest headache for disaster recovery is domain controllers," he says. "We are able to create a virtual machine for our domain controller and back up an entire virtual machine to tape and then restore that virtual machine on another ESX server at another location."

While Moffitt and Thomas say they have had no real problems with VMware, both say it is important to start slowly.

"As with anything, test it thoroughly and make sure it's going to work in your environment," Thomas says.

ESX Server 2 costs $3,750 for a two-CPU machine. Virtual SMP, which is an add-on to ESX Server 2, starts at $1,250 for a two-processor machine. ■

Virtual reality

Companies are turning to VMware's virtual machine technology to consolidate proliferating Intel servers. Some things to think about if you're considering the virtual route:

- **Cleaning house:** Multiple Intel boxes can be consolidated.
- **Managing things:** VMware lets users monitor and dynamically allocate resources across multiple virtual machines.
- **Dual processing:** VMware's ESX Server 2 supports virtual SMP so virtual machines can support two processors.
- **Hardware updates:** Older applications that otherwise wouldn't be migrated can share newer, higher-processing boxes.
- **Overhead:** Because it's software, there is some drain on processors.
- **The soft touch:** VMware is still a new idea so many independent software vendors might not support a VMware environment.
- **Single point of failure:** A hardware problem means multiple systems go down.

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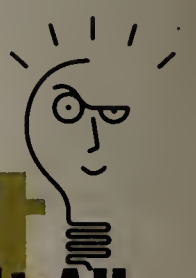

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Infrastructure

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Users look to cut network printing costs

■ BY JENNIFER MEARS

Like most IT managers, Tom Kotlarek didn't have networked printing at the top of his worry list. But the head of IT at movie studio DreamWorks in Glendale, Calif., saw that his fleet of nearly 300 printers was getting a little long in the tooth. With technology pushing printing speeds and quality to new levels, he knew it was time to take a look at replacing those devices.

He not only updated the machines, but also turned over all of his network printing headaches to HP, which assessed the studio's needs and reduced the number of printers by about 100. DreamWorks also didn't have to make an upfront capital investment in printers, but rather pays for printing services on a cost-per-page basis.

Kotlarek says he's saving between 10% and 12% per page compared with what his printing costs were before. "And I don't have to worry about the printers at all," he says, noting that the move has let him focus on more strategic IT projects.

It has been a common scenario for most IT departments: pay little attention to printing and when changes need to be made, simply yank out old printers and replace them with new ones. Increasingly, however, printing, copying, faxing and other output issues are rising to the top of IT lists as companies look for ways to reduce costs.

"Companies have already cut a lot of the easy things and some of the difficult ones, and they're looking to cut further and further," says Ken Weilerstein, research director of the digital document and imaging group at Gartner. "Printing has turned out to be one of the areas that has been left unmanaged and where there is a lot of room for

See Printing, page 20

Connecting things

Consolidating printers and other imaging devices and putting them on the network can lead to big savings. Here are some things to consider:

Challenges:

- **No standard drivers.** Application incompatibilities can lead to misprints.
- **User reluctance.** Be prepared for some users to put up a fight when asked to trade personal printers for shared network devices.
- **Split responsibilities.** In most companies, IT might handle printers but other departments might manage devices such as faxes and copiers. Creating a single project team is important.
- **No clear understanding of needs and costs.** Huddle with business users to get a good feeling for what kind of document output is being done.
- **Network support.** Printing appliances can offload print queuing and spooling jobs from network servers.

Benefits:

- **Centralized management.** Networked devices mean that IT can centrally manage and monitor them.
- **Better control.** IT can keep track of how networked devices are being used.
- **Reduced costs.** Vendor assessments help identify where devices can be consolidated so that workgroups can share a multifunction device.
- **Outsourcing.** IT can hand off output management to vendors, which can troubleshoot problems and businesses can pay on a per-page basis, rather than laying out capital upfront.
- **Enhanced management products.** Vendors' services and software help users better manage and track output devices and their use.

Takes

■ **Tandberg** is adding more options to its videoconferencing products with the release of a gateway tool designed to bridge the world of IP and ISDN-based conferencing. The **Tandberg Gateway** comes in two models — 2M and 4M bit/sec — that support up to eight simultaneous point-to-point video calls, depending on the bandwidth used in each call. The gateway will work with endpoints from rivals Polycom, VCON and Sony. Tandberg's Gateway costs $32,000 for the 4M bit/sec model and $22,000 for the 2M bit/sec model. Tandberg is offering the 4M bit/sec model at the same price as the 2M bit/sec edition through Oct. 31.

■ **NSI Software** this week is scheduled to launch data replication software for small and midsize businesses and remote offices within enterprise-size businesses. Called **Double-Take for Windows — Workgroup NAS Edition,** the software lets data be copied locally or across distances between Windows Powered network-attached storage devices for disaster-recovery purposes. It also can be installed so that a Windows Powered NAS appliance replicates data to a Windows server or to a storage-area network/NAS gateway in a data center. The product starts at $5,000.

NetScaler upgrades SSL remote access

■ BY TIM GREENE

Businesses have a new option for Secure Sockets Layer remote access equipment as NetScaler adds software to its Web-acceleration appliance.

The software adds authentication and authorization capabilities to its Request Switch 9000 iON appliance, making it possible for remote users to log on to the device and have it proxy SSL sessions to servers on the network. To initiate a session, the remote machine only needs a Web browser that supports SSL.

These new capabilities pit the company against a host of vendors that focus exclusively on SSL remote-access such as Aspelle, Aventail, Neoteris, Netilla and Whale Communications. All these companies share the fact that their boxes sit on the LAN side of corporate firewalls and proxy SSL sessions between remote users and corporate servers, although NetScaler says it improves the efficiency of these connections.

"NetScaler deals primarily with performance issues and may very well be ahead of the game at tying SSL VPNs to good performance for the applications being accessed," says Dave Kosiur, an analyst with Burton Group. He says NetScaler customers that consult with Burton give NetScaler good marks in the areas of filtering, acceleration and load balancing.

NetScaler's Request Switch 9000 iON will support access rights tools later this year.

NetScaler's weakness is in securing the remote machine, Kosiur says. Nokia's and Whale's proxy appliances determine whether the remote machine is trusted, and based on this adjust how much remote users can access. So a user connecting from an Internet kiosk might be authorized to check e-mail while a user connecting from a company-issued laptop would be allowed access to all applications.

In the trade-off between security of the remote machine and performance, security wins, says Eric Walter, manager of network services for retail chain 7-Eleven, which is beta-testing NetScaler's new software. But he says lack of tools to alter access rights based on the type of machine accessing the network would not be a deal-breaker with NetScaler. Instead, he would restrict access for all users to a very limited subset of applications until NetScaler came up with a way to tailor access rights. NetScaler says those tools will be ready later this year.

7-Eleven has considered SSL remote-access gear from Nortel and other vendors, but found the types of applications that were accessible to be too limited.

After Aug. 1, Request Switch 9000s will ship with the new software and support for accessing Web applications from five simultaneous remote users. NetScaler appliances range from $10,000 for a box that supports Fast Ethernet interfaces to $75,000 for a redundant pair of boxes that support Gigabit Ethernet. It costs an extra $10,000 to add support for terminal server and client-server applications. There is also additional costs more for more simultaneous users, ranging from $5,000 for up to 100 users to $25,000 for up to 2,500 users. ■

TOLLY ON TECHNOLOGY

Kevin Tolly

The buzz from Boston

If the recent Network World Fusion InstaPoll results reflect a broader reality, then my experience a few weeks ago will be shared by only 26% of Fusion readers this year — I went to two trade shows. While trade show attendance has plummeted, I was surprised that more than 50% of respondents said that they've just stopped attending. Period. While sometimes a hassle, there are usually things you learn that you can't learn any other way.

The fact that I could attend two trade shows in the same week certainly says something about what has been happening. Smaller is better seems to be the mantra these days. Shows that focus on specific technologies seem to be holding their own or picking up momentum while the monster shows like NetWorld+Interop are perhaps in danger of extinction.

In late June, I made the rounds of Network Processors East (www.nwfusion.com, DocFinder: 6830) and 802.11 Planet (DocFinder: 6831) — both running during the same week in or around Boston.

Both shows were most definitely sans glitz — and that was refreshing. The circus had left town. The shows were upbeat but all business. The wildest show element I could spot was a lone barkeep offering up draft beer at the Aruba Networks booth at the wireless show. There was no line. Attendees had too much business to attend to. This was not a boondoggle crowd.

I couldn't help thinking about what attendees had to endure just a few years ago. I can't remember which was worse, trying to have a meeting near the Packet Engines "train" booth — replete with steam whistle, or attempting to talk to Cabletron executives while the "Cabletron vs. Cisco" boxing match was taking place in the ring below us. Does anyone miss this? I don't.

The shows had double déjà vu elements. At the Network Processor East show, I heard about "merchant" processors that could do all kinds of things — including VPN termination and Layer 2 to Layer 7 switching. All the things you would have expected to hear from switch vendors Alteon, Extreme Networks and Foundry Networks at N+I a few years back.

And, every few sentences, the phrase "custom ASICs" would be thrown in. This hardware was the cornerstone of the product line. Now with this functionality still every bit as important as it was a few years ago, network processor vendors are offering it as a commodity. The fact that this level of functionality is available now at a component level is good news for end users.

If you were wondering, then, what happened to the folks hawking the then-leading-edge custom ASICs, you needn't wonder long — they've all gone into wireless — the now leading edge.

In meeting with start-ups such as Airespace, Aruba, Azimuth, Engim, Legra and Trapeze recently, it has been like attending a college reunion. I was happy to reacquaint myself with management teams I'd first gotten to know at companies such as Alteon, 3Com, Cisco, Extreme, Foundry, Nortel and so forth.

The movers-and-shakers in WLAN switching are no rookies. They know how to build and sell technology. Their excitement about their offerings — and the rejuvenation of the enterprise IT market — certainly created a nice buzz in Boston.

Tolly is president of The Tolly Group, a strategic consulting and independent testing company in Manasquan, N.J. He can be reached at ktolly@tolly.com

Printing

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improvement."

Gartner estimates that companies spend 1% to 3% of their revenue on costs related to printing and other output functions such as copying, scanning and faxing, Weilerstein says. Often overlooked, the number of printers in an organization tends to mushroom. By assessing needs and then consolidating output devices — and in most cases putting those devices on a network — companies can reduce costs by 30%, he says.

"Enterprises are starting to catch on," he says. "Two or three years ago, the IT priority list was topped by items beginning with 'e'. Printing wasn't even on the list. Not to say they weren't buying printers; it just didn't have any particular strategic direction. Now they've come to see this as an opportunity to save money."

As a result, many organizations are taking a hard look at their printers and output devices, and what they're spending to maintain and operate them. And they're using the network to get more out of the equipment they decide to keep.

Networked printers are nothing new; the ability to share printers was one of the driving forces behind early LAN implementations, analysts say. But the number of networked printers is growing.

"The network printer is certainly part of the corporate infrastructure, but the tendency is to take them for granted," Weilerstein says.

One configuration change is to put more printers, even personal desktop printers, on the network in order to manage them better. According to Dataquest, about two-thirds of black-and-white digital printers are network-attached today, up from a little more than half two years ago.

Vendors such as HP, IBM, Lexmark and Xerox are providing the tools to make managing those devices easier. HP has WebJetAdmin software for managing — and monitoring — networked peripherals. Lexmark provides software to ease the installation of networked printers and lets network managers distribute drivers to clients remotely. Vendors also are focusing on adding wireless connectivity and security features for networked printers.

Analysts and vendors say these types of management products will improve as the trend to connect printing and imaging devices to networks continues to grow.

"Streamlining management of printers is something they haven't been able to do with personal devices, and it's one of the reasons why [networked printing] is being embraced by IT managers. They can look and see who's printing what, where, when and how, and they can control costs," says Dan Corsetti, research analyst of hardcopy peripherals solutions and services at IDC. "They can control device downtime by knowing immediately when there is a problem."

The network also is letting businesses make good use of multifunction products, equipment that can print, copy, fax and scan. That means businesses can not only get better management of their devices, but they also can reduce the number they have to manage in the process, analysts say. Networked devices also means less copying and distribution of documents and a reduction in the use of paper, because end users can simply print whatever electronically delivered documents they choose.

At United Health Services Hospitals in Johnson City, N.Y., networked multifunction devices from Xerox are replacing dozens of stand-alone printers and fax machines. Keith Jamba, purchasing manager at the health system, says he expects to save $100,000 per year by consolidating devices and reducing money spent on items such as maintenance and supplies.

Xerox also created a Web-based forms management service so the hospital no longer has to print and distribute forms.

All the changes are part of an Office Document Assessment that Xerox performed for United Health Services to pinpoint where changes could be made to cut printing and imaging costs. It's a service that most vendors offer to help businesses figure out how best to revamp their output architectures.

"We were blown away by [the results of the Xerox assessment]," Jamba says. "We were surprised by the numbers. Although we had a pretty good idea of the number of copies we did, we were surprised by how much we were spending and how much we could potentially save." ■

Start-up rolls out provisioning, virtualization appliance

■ BY DENI CONNOR

Start-up Candera this week rolled out an appliance that links Fibre Channel storage arrays and server-attached storage to form a heterogeneous pool of resources that can be provisioned from one spot.

Called the SCE 510, the appliance connects to a Fibre Channel switch port and controls the management and provisioning of multivendor storage arrays, host computers, switches and host bus adapters. From its position in a storage-area network (SAN), it can enact rules an IT administrator sets that affect how storage is added, removed or moved around the network.

Candera's appliance also works out-of-the-box with a variety of storage devices from vendors such as Brocade Communications, Cisco, EMC, Emulex and HP.

When placed in a SAN, the SCE 510 discovers and monitors storage devices and then reports on I/O patterns and fault management. Using policies, the appliance enables the provisioning of storage. As storage is added to a network, the SCE 510 creates a profile of it, which it uses when storage needs to be reallocated.

S. "Sunni" Sundaresh, Candera's president and CEO, claims that customers often use a collection of tools from different vendors to manage and provision their SANs.

Candera's SCE-510 can help enact rules that affect how storage is moved.

"The management problem is solved in the storage subsystem in a homogeneous environment or in a heterogeneous environment with software running on host servers," Sundaresh says.

Candera competes with other virtualization vendors such as HP, IBM, DataCore and FalconStor. Unlike DataCore, FalconStor and IBM products, which are installed on an off-the-shelf server, Candera's box is specially built using ASICs.

The SCE 510 will be available this quarter in a redundant, clustered configuration. Replication and chargeback capabilities will be added in future releases. The company would not reveal prices. ■

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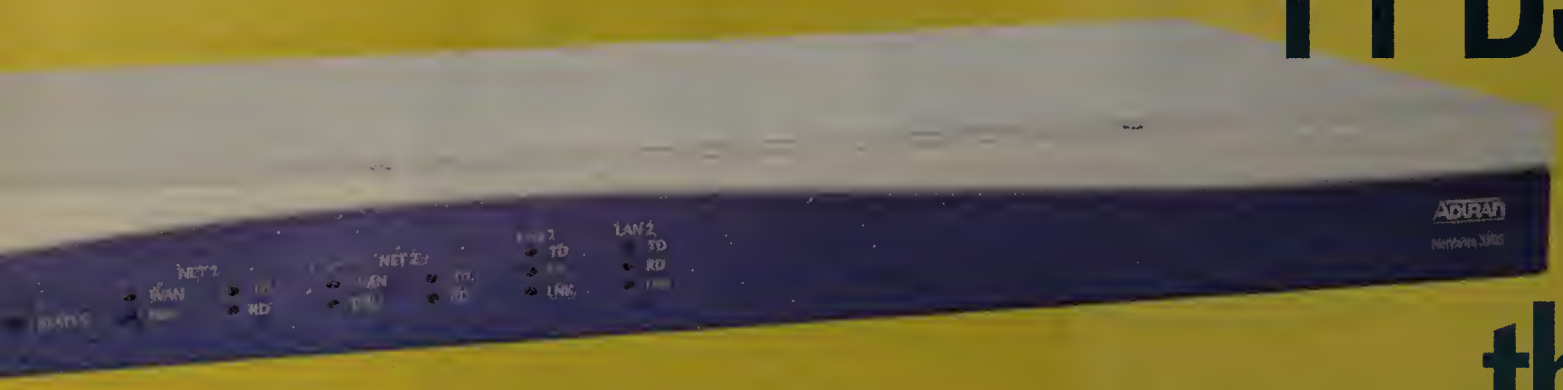

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Outsourcing mgmt. gets a second look

Companies such as IBM, EDS and HP learn how to become viable options for a range of customers.

■ BY DENISE DUBIE

Sheryl Glore wants to get what she pays for. In terms of network management and administration, she says the best way to do that is to contract services with an outsourcer.

Glore, chief of implementation and standards for the Department of the Air Force at Patrick Air Force Base in Florida, says she can't risk her IT infrastructure to staff turnover in her department, which supports — literally — rocket science and other applications over a satellite WAN.

"Outsourcing gives us the higher-caliber technical people we need and a better sense of continuity in the long term," Glore says. "Typically at an Air Force base, a technician is assigned here for two years and then reassigned elsewhere. There is no guarantee the next person will have the same skill set."

For Glore, outsourcing IT tasks helps her maintain stability. For others, outsourcing promises to reduce or at least contain costs, provide staffing flexibility and mitigate risk when a new technology challenges the skills of full-time staff. But in the past few years, the benefits of outsourcing have been muddied by a slew of start-ups that suffered the fate of the dot-com bust, went out of business and sullied the strategy of outsourcing.

Over the past 10 months, companies such as Electronic Data Systems (EDS), HP and IBM Global Services have revived the outsourcing market (and their revenue sheets) by signing mega-million-dollar deals with American Express, Procter & Gamble and J.D. Edwards. More than 40% of outsourcing contracts in 2002 were for between $100 million and $249 million. But more interesting is that these industry heavyweights also have learned how to ink smaller deals — an outsourcing evolution of sorts that could cause more companies to give outsourcing a second look.

"The big companies can now offer smaller services, which gives customers more options and peace of mind," says Corey Ferengul, a senior analyst with Meta Group. "Customers looking to outsource and seeing the name IBM will think, 'OK, I can sign on. IBM won't be going out of

See Outsourcing, page 26

"People with strong ties and commitments to the university are willing to do what it takes to take us to the next level. Some things you just can't buy."

Brian Jones
Manager of network engineering and operations, Virginia Polytechnic Institute and State University

Outsourcing on the rise

Meta Group reports

70%

of companies currently outsource at least some parts of IT. That number is expected to grow to

100%

by 2006.

Short Takes

■ **Altiris** has released software that lets customers roll back patches they have made to servers, desktops and laptop PCs in the event of problems. Called **Recovery Solution,** the software now is integrated into Altiris' Patch Management Solution. The company is scheduled to enhance its Patch Management Solution in the fourth quarter so customers can track patches and prepare and deliver critical updates for third-party Windows applications. In addition, the release will support Unix and Linux. Patch Management Solution 5.6 is part of Altiris' Server Provisioning Suite, which costs $300 per node. The Server Provisioning Suite automates deployment of server operating systems and applications. The Recovery Solution is $69 per node.

■ **Adobe Systems** is teaching **PDF** documents how to speak **XML** to provide ties to enterprise systems. The vendor is working on a new version of its **Form Designer** that will let companies include XML schemas when creating forms. These forms can be distributed in PDF or XML Data Package format. Once filled in, they can be processed as a PDF or as XML, Adobe says. XDP files are XML files that contain XML form data, XML form templates, PDF documents and other XML information. They work with enterprise applications via common XML tools and Web services, according to Adobe. Pricing for Form Designer has yet to be determined. The current version costs $1,695, according to Adobe's Web site.

Documentum steps up collaboration in eRoom 7

■ BY JENNIFER MEARS

Documentum this week is planning to roll out an update to the eRoom collaboration technology it acquired last year, giving users the ability to search across multiple workspaces, manage active eRooms from a single location and collaborate around specific business processes.

The update, eRoom 7, enhances the existing features of eRoom as Documentum works toward more tightly integrating the collaboration technology with its enterprise content management system. Deeper integration between the two — such as being able to launch an eRoom from within the Documentum content management system — is expected to come later this year with the release of eRoom Enterprise 7.

This week's eRoom 7 release, "is not a huge jump forward really," says Erica Rugullies, an analyst with Forrester Research. "It's an improvement of existing functionality, rather than a breakthrough innovation."

With eRoom 7, users log on once through single sign-on and then have the ability to search across multiple eRooms hosted on multiple servers. In past releases, searching was confined to eRooms located on a single server.

In addition, the eRoom architecture has been beefed up to handle more users, and installations running on multiple servers can be administered from a single user interface, says Jake Sorofman, director of product marketing at Documentum.

The new release also includes pre-configured collaborative workspaces to make it easier for business users to set up eRooms to handle projects that must meet government regulatory guidelines, for example, or for projects related to new product development, Sorofman says.

Bob Buttacavoli, partner with Mercer Human Resources Consulting in Manhattan, says the project management interface combined with collaboration provides just the right amount of control the company needs to make sure projects

See Documentum, page 26

@server

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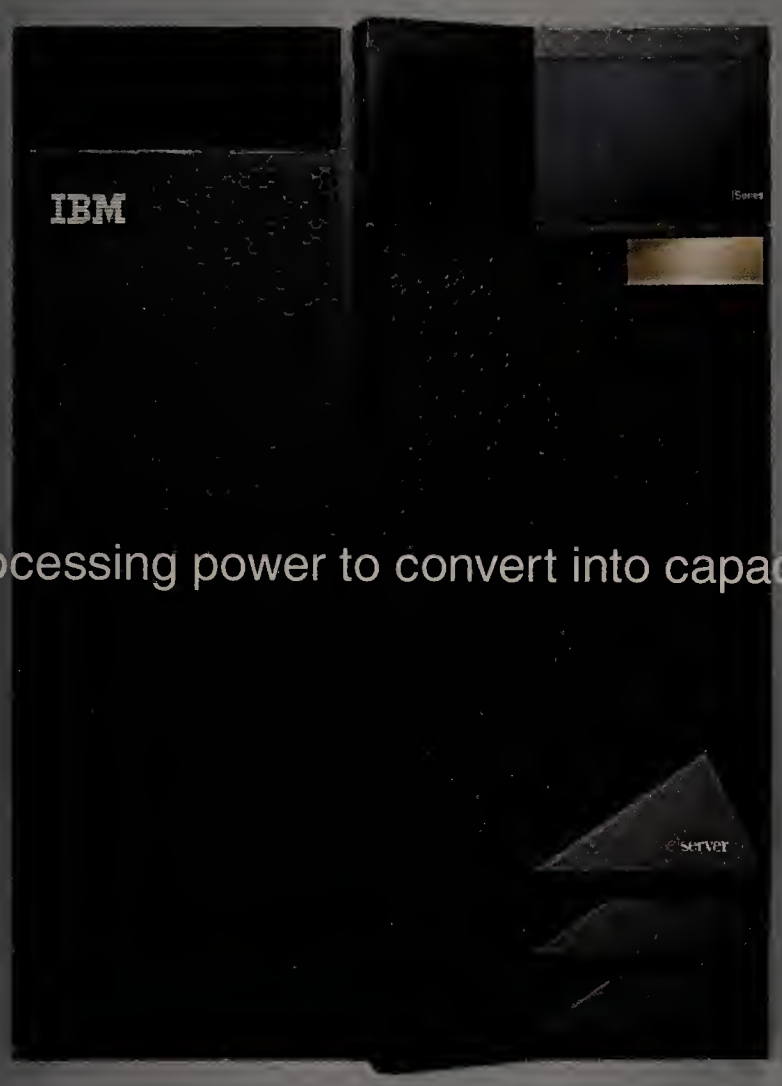

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'NET INSIDER
Scott Bradner

Will there be a next-generation network?

The International Telecommunication Union recently held a workshop titled "Next-Generation Networks: What, When and How?" The assumption in many of the presentations was that there would be a new IP network in the future that would augment and then replace the Internet. It was an interesting view — one that is not unexpected from the traditional telephone companies, but one that brings a strong sense of déjà vu.

The goals of the workshop included:

- Understand the service and technology drivers for NGN.
- Explore the emerging new-generation service challenges.
- Examine how NGN and the Internet are complementary.
- Identify key standards needed, and discuss how standards gaps can be filled.

The presentations, all of which are at www.nwfusion.com, DocFinder: 6834, were mostly by representatives of traditional telephone companies, or companies that supply them with equipment. A few presentations by ITU-T study group chairs and others, including one about what is going on in the Internet Engineering Task Force, filled out the agenda. Many of the presentations were quite well done but, to me, represented a view of modern data networking of which I am not familiar. (To paraphrase Bobby Jones talking about fellow golf great Jack Nicklaus ... though I do not think the network described is quite as real as Mr. Nicklaus.)

One theme that showed up in a number of presentations was that, because the Internet was not robust, reliable, secure or predictable, the carriers were going to have to develop a new IP-based network that would run parallel to it. This new network would be all the things that the Internet is not (at least in some minds) and thus would attract business away from the Internet to an environment that one presentation said would have to include per-session billing for use. The assumption is that this new network, which is the NGN of the workshop title, eventually might replace the existing Internet.

This is an idea that does not want to die. I ran into it at a conference I attended in the early 1990s. I was on a panel that previewed the recent ITU-T workshop. The question asked of us was something like "Is the Internet the model for the national network infrastructure?" (the name in those days for NGN). One of my co-panelists argued that the network of the future would be ATM-based, and the other said it would be cable-TV based. At that time I said, in essence, that the Internet *was* the network of the future and it was too late to replace it.

A decade or so later I said the same thing in the ITU-T workshop. I still do not think that the Internet is reliably crappy enough to drive the creation of a new network. I might not be right, time will tell that, but at least I'm consistent.

Disclaimer: Consistency turns out to be only a temporary condition in the context of organizations of Harvard's age, but the above is my consistent opinion.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@sobco.com.

Outsourcing

continued from page 23

business.'"

IBM last year announced it would start to offer products and services for small to midsize customers, from which the company has garnered about 20%, or $4.3 billion, of its corporate revenue in the first quarter of this year. Competitor EDS acquired Loudcloud and integrated the company's services model into its portfolio. And HP's merger with Compaq gave that company a leg up in providing a range of services that has the company growing its service division and competing with Accenture, Computer Sciences, EDS and IBM, says Julie Giera, vice president and research fellow at Forrester Research.

A couple of years ago, management service providers (MSP) emerged offering customers a quick and painless way to put their businesses on the Web. Others developed to offer, say, remote network monitoring and other specific IT tasks. With limited offerings, many of those companies are no longer in business. Still, not all MSPs failed. Companies such as Apptegrity, start-up Coss Technology, InteQ, SevenSpace, SilverBack Technologies and Totality still exist with expanded or modified offerings.

"Outsourcing makes a lot of sense because the average customer isn't able to buy multiple tools and find staff experienced in all areas. Outsourcers can provide that," says Rich Ptak, principal at Ptak Associates.

In addition to large companies addressing smaller customers' needs, industry watchers say outsourcing will gain momentum in vertical markets. According to IDC, banking, government and media groups used outsourcing as their primary IT tool in 2002. Meta's Ferengul says companies in the past 18 months or so have begun to outsource smaller, vertical applications, such as online banking, or specific management tasks, such as HP server monitoring.

"It's not the big SAP deals we used to see. Outsourcing deals today are much more focused on one application, one task," Ferengul says.

In Glore's case, Patrick Air Force Base works with Computer Sciences Raytheon in a long-term outsourcing engagement that has the system integrator deploying and maintaining Unicenter network and systems management software across the department's 50 Windows servers and hundreds of network devices. Connected via satellite and spanning about 5,000 nautical miles from Cape Canaveral through the Caribbean to islands such as Antigua, Glore's network requires IT staff to have specific skills to ensure the network stays up and running.

Yet despite the benefits of outsourcing, doubt remains among network executives who say in-house staff and tools are better-equipped to address a specific company's IT concerns.

"People with strong ties and commitments to the university are willing to do what it takes to take us to the next level," says Brian Jones, manager of network engineering and operations at Virginia Polytechnic Institute and State University in Blacksburg. "Some things you just can't buy."

James Olson agrees. The CIO at Waterbury Hospital in Connecticut says with IT staff having to manage two hospitals, doctors' offices (some of which are in doctors' homes) and more than 160 applications, an outsourcer couldn't cost-effectively address his network management needs.

"I've participated in 11 outsourcing assessments and proposals. None of them provided significant leverage for the outsourcer, or were such a scope change for the hospital, that the proposal was unacceptable," he says.

Jake Star, vice president of computer services at Mohegan Sun casino in Uncasville, Conn., says his network team has yet to see how the benefits of outsourcing outweigh the peace of mind in managing the network themselves.

"At over $1,700 per minute in lost net profits as a result of downtime, we feel much more comfortable and are willing to pay the cost of having all the skill sets here in-house," Star says. ■

Documentum

continued from page 23

stay on track.

"There is a fine balance between overly rigid program management and collaborative capabilities," he says. "The project management feature is what we've been particularly anxious to get in eRoom 7."

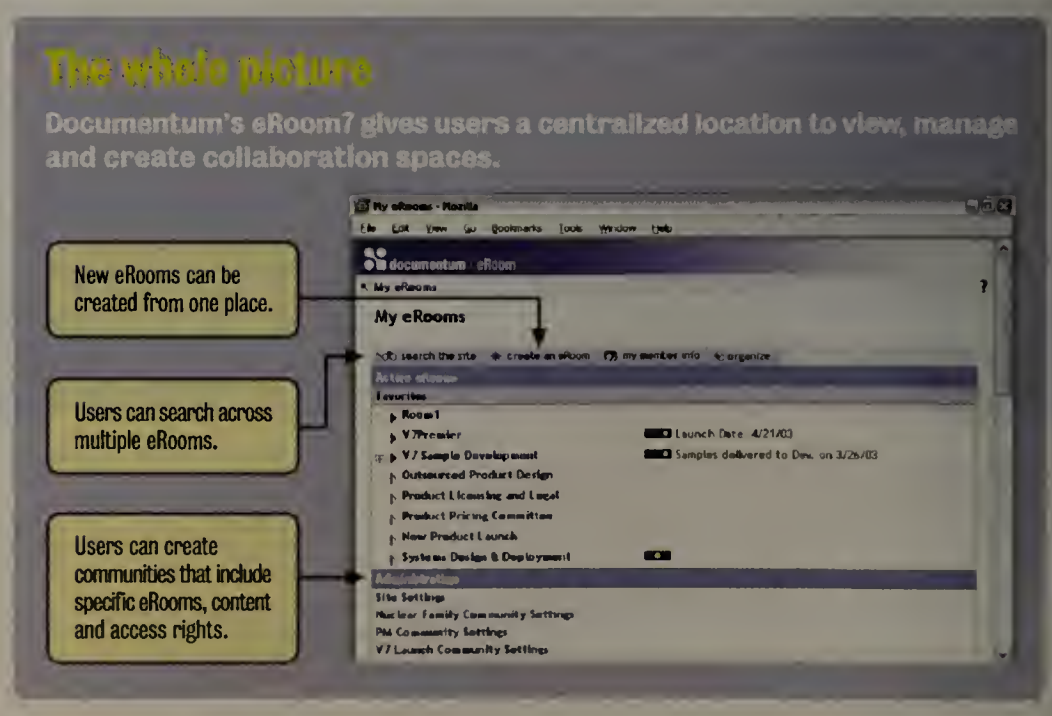
Mercer uses eRoom's collaboration technology to work with hundreds of clients around the world.

"This is taking it to the next level in terms of crossing the enterprise, meaning that multiple sites feed into one site for an overall dashboard view," he says.

Collaboration is becoming increasingly important to content management vendors as users look for ways to share not only formal documents, but also content as it is in the creation process. Documentum competitors such as iManage and OpenText already have tightly integrated collaboration and content management capabilities, analysts say.

Documentum eRoom 7, which is priced at about $200 per seat, can be deployed with Documentum's content management system, but the two still retain separate content repositories, although users can opt to save content created in an eRoom to Documentum. ERoom 7 also can be deployed alone.

Documentum eRoom Enterprise 7, scheduled for release in the fourth quarter, is expected to cost about $275 per seat. ■



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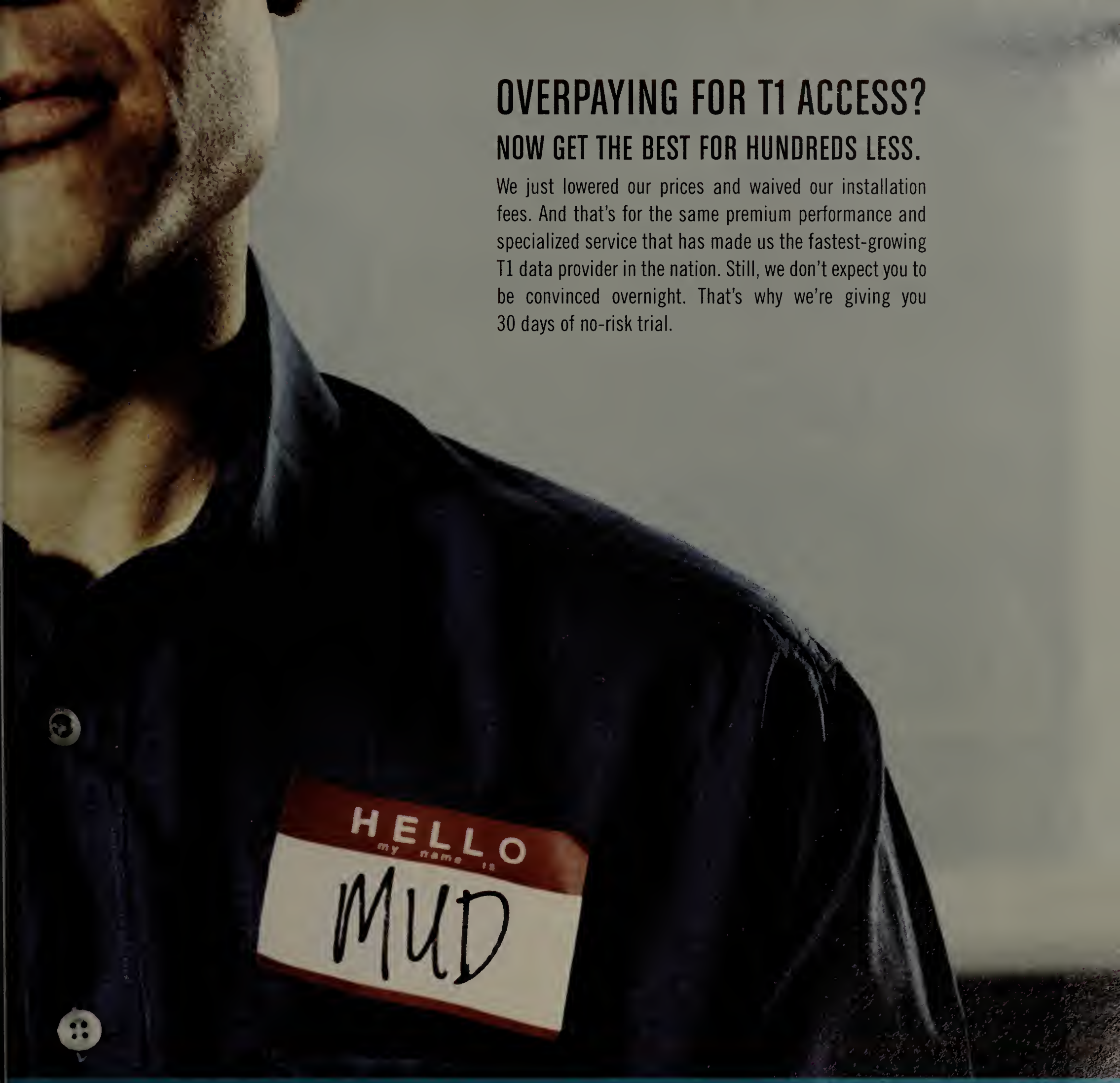

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Short Takes

■ **Loral Space & Communications,** a satellite service provider and manufacturer, filed for **Chapter 11** bankruptcy protection last week. The service provider also announced the sale of six of its satellites that hover over North America to Intelsat for $1.1 billion. Loral, which operates a global network of satellites, says its mounting debt totaling $2.2 billion drove the company into bankruptcy. The company says it will reorganize with a smaller, international fleet and continue to focus on its satellite manufacturing business. Loral offers satellite data services to enterprise and government customers. The company also offers broadcast video services to television and cable network providers.

■ **AT&T** has inked a seven-year contract with **News Corp.** worth $150 million. The deal includes ATM, frame relay, private line, Internet access, local and long-distance voice services domestically and around the world. News Corp. uses AT&T's network to connect 130 offices in Asia, Australia, Europe and the U.S.

■ Members of a consortium supporting the use of smart cards to identify users in wireless Internet networks have drafted a specification to ensure interoperability between card and device manufacturers. A major feature of the **WLAN-SIM V0.1** specification, which the WLAN Smart Card Consortium approved, is the use of Subscriber Identification Module technology as an authentication tool in wireless LAN hotspots, the consortium said last week. SIM technology, which essentially consists of a smart card containing user ID data, is a core component of GSM networks. The ID technology is used to support roaming, billing and other back-office services seamlessly across mobile networks. Smart card-based authentication in WLAN hot spots will offer companies the same level of security they are accustomed to in GSM networks, the association said.

TV stations dial in app service

■ BY JENNIFER MEARS

Internet Broadcasting Systems, which operates Web sites for television news stations around the country, has used Akamai Technologies' content delivery network for years to speed the delivery of static and dynamic content and to reduce the load on its origin servers. It also has pushed out streaming video and video on demand to the CDN.

"Things were working well," says Dave Abbott, CTO at IBS in Minneapolis. "But then I was taking a look and realizing, 'Man, the most expensive thing for me to build out is anything that touches my database because Oracle is so darn expensive.'"

So Abbott turned to Akamai again for a solution. Today, IBS is one of the first to use a new service Akamai rolled out in partnership with IBM earlier this year. Called EdgeComputing Powered by WebSphere, the service is Akamai's first foray into delivering true application processing power at the Internet's edge.

Other CDNs are moving into application delivery. Mirror Image, for example, can handle Java application processing in its network of content access points. But the alliance with IBM gives Akamai's service a twist because it extends the WebSphere environment out to the edge of the Internet, Akamai executives say.

The service is built on Akamai's overlay network of more than 15,000 edge servers in more than 1,000 networks and in more than 60 countries. Akamai has integrated WebSphere application servers within the Akamai network to support the execution of Java Server Pages, Java servlets and JavaBeans at the edge of the Internet.

As a result, Akamai and IBM executives say, companies don't have to spend time and money on provisioning extra hardware to handle spikes in demand. With EdgeComputing Powered by WebSphere, customers have access to a WebSphere environment on demand, meaning they have the infrastructure they need when they need it and only pay for what they use, the companies say. The service is available from Akamai and IBM Global Services and is priced based on how many application requests the Akamai network handles.

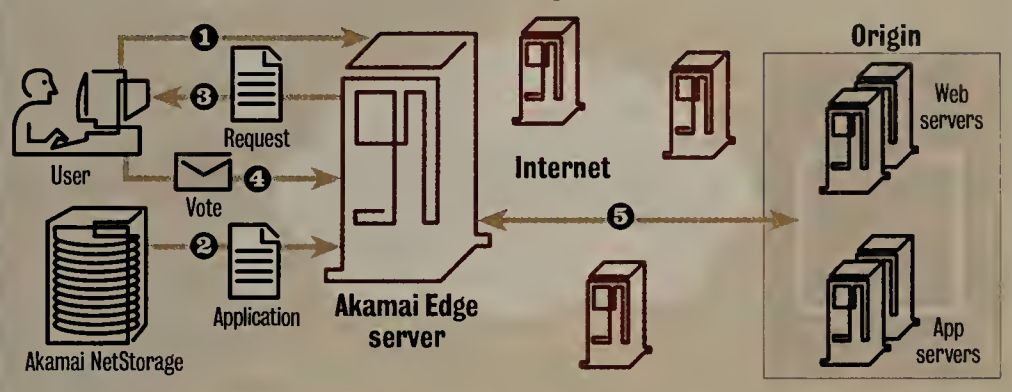
In addition to getting the WebSphere environment on demand, customers also get the benefit of the Akamai network that was designed to deliver content to end users as quickly as possible.

Abbott says that's just what he was looking for as he dealt with Web site traffic that was increasing about 10% every month. The 66 sites he handles also were becoming increasingly interactive with features such as polls, games and quizzes — and the demands on those applications spike when big news breaks.

See Akamai, page 30

Taking it to the edge

Internet Broadcasting Systems uses Akamai's EdgeComputing by WebSphere to run a Java-based polling application.



1. User requests page that contains application.
2. Application is delivered to Akamai Edge server from Akamai NetStorage on the network's edge.
3. Akamai dynamically builds the page with poll stored at the edge, using the IBM WebSphere Application Server that has been loaded on to edge servers.
4. User can view current polling results or submit vote.
5. Threshold is set so first 100 votes are processed synchronously with the origin at no cost to performance. From 100 votes on, data is returned to the origin in batches (once every minute), reducing CPU cycles by offloading processing.

Sprint continues push to expand global reach

■ BY DENISE PAPPALARDO

Sprint is aggressively expanding its global network to offer dedicated IP services to more multinational business users.

The carrier is building points of presence around the world and partnering with well-known international service providers such as Equant and Infonet to offer customers ubiquitous IP and data services in 100 countries.

In the past 12 months, Sprint has deployed 50 network nodes in countries such as Germany, Taiwan and Venezuela, says Dan O'Connor, vice president of marketing for Sprint International.

The carrier is putting much effort into building out its wholly owned network by purchasing dark and fully lit fiber from local providers in dozens of countries. Sprint also has drafted new and expanded relationships with 80 undersea cable network providers to improve connectivity and enhance redundancy between continents and countries, O'Connor says.

See Sprint, page 30

International backbone

Sprint has been expanding its global network to 25 cities with six more planned before year-end.

Added this year:
- Melbourne, Australia
- Vienna, Austria
- Dusseldorf, Germany
- Stuttgart, Germany
- Oslo, Norway
- Zurich, Switzerland
- Taipei, Taiwan

Added by year-end:
- Seoul, South Korea
- Berlin, Germany
- Barcelona, Spain
- Madrid, Spain
- Buenos Aires, Argentina
- Bogota, Colombia

EYE ON THE CARRIERS

Johna Till Johnson

Wi-Fi services hold great promise, but . . .

Is Wi-Fi overhyped? Or will Wi-Fi hot spots and services transform cellular and traditional wireless services?

The answer is yes to both. But how can a technology be overhyped and transformational at the same time?

Let's take them separately. Why do I think Wi-Fi is overhyped? Quite simply, I don't think Wi-Fi services represent the investment bonanza they've been portrayed as providing. Venture capitalists and other financial types are constantly searching for the "next big thing," by which they mean a new market worthy of investment. The argument has been made that Wi-Fi is similar to, say, the Sony Discman or portable MP3 players: By making what had been a stationary technology mobile, a new market has been created.

But the analogy's not quite right. Keep in mind the equation: "Market equals compelling technology plus viable business model." In other words, for a technology to generate a "market-worthy" investment, it needs to be incorporated into a viable business model. Ignoring that equation got us into Internet bubble trouble.

When it comes to Wi-Fi services, the business model is still embryonic. True, hotels, restaurants and governments are busy rolling out Wi-Fi services, but they're positioning Wi-Fi primarily as an enhancement to entice consumers to spend more time — and dollars — on their core services (hotel rooms, Big Macs or lattes). The goal is to keep you from going around the corner to Peet's or Wendy's. Moreover, although many of these folks charge for Wi-Fi services, often the prices barely cover usage costs. In others, the services ultimately will cannibalize other services. For example, hotels stand to lose revenue from long-distance phone calls. So it's hard to argue that Wi-Fi services will reap billions.

However, Wi-Fi represents a massive paradigm shift in the use of computing. One fascinating outcome of our recent IP telephony study was that the greatest effect of IP telephony was on user mobility. This is particularly true when IP telephony combines with Wi-Fi. For example, one executive reported traveling to a Hyatt in China, logging into the Wi-Fi network there and placing long-distance calls back to the US for free using his IP telephony softphone.

You can see how this could play out: You're sitting at a booth in a Starbucks or McDonald's placing calls through your corporate "virtual phone network" to Beirut or Beijing. And you don't even need a laptop — your iPaq doubles as a phone. The effect on how you do business is tremendous.

That's not the only scenario. Cities could broadcast location-based information about events or promotions, and provide location-based directions to sites of interest. And ISPs can begin to offer Wi-Fi based broadband access to remote office facilities unable to obtain fiber, cable or DSL connectivity — something they're already beginning to do. (Now that "fixed wireless" is dead as an access technology, Wi-Fi looks like it's showing up to fill that gap.)

The upshot? There's definitely a "there" there. Just as Wi-Fi has restructured home networks, the technology slowly but surely will reconfigure the face of public networks. Just don't count on Wi-Fi services making massive amounts of money, at least not upfront.

Johnson is president and chief research officer at Nemertes Research, an independent technology research firm. She can be reached at johna@nemertes.com.

Sprint

continued from page 29

While Sprint offers IP services in 100 countries, it still reaches the majority of its international customers through partner networks. Sprint has POPs in 25 countries, and has sales, customer service and technical staff in 30 countries. The carrier works closely with partners in the remaining regions.

"Sprint is very good at working with partners," says Brownlee Thomas, an analyst at Forrester Research. "[Sprint] has a long history of playing well with other providers, which is not a strong point for other multinational carriers, namely AT&T and MCI."

Sprint's ability to work well and select stable international partners will result in new service-level guarantees that the carrier plans to launch this quarter.

The carrier says it will offer dedicated IP Network Based VPN and its Layer 2 Tunneling Protocol v3 (L2TPv3) customers standard service-level agreements (SLA) that will cover a customer's entire network even if it spans several provider backbones, says Peter Parish, director of product marketing at Sprint.

Today, the carrier only offers these types of SLAs on an "individual customer basis."

Although the majority of Sprint's international expansion focuses on the carrier's IP offerings, O'Connor says it also is expanding the reach of traditional frame relay, ATM and private-line services. But support for these legacy services is not as widely available. For example, they will not be available in most of Latin America and parts of Europe.

Instead of pushing traditional data services, Sprint is focusing on its L2TPv3 offerings, which it announced in January (www.nwfusion.com, DocFinder: 6837).

These offerings, called SprintLink Packet Private Line, SprintLink Frame Relay and Virtual LAN Service, let users support a hybrid network environment. For example, a customer could maintain local frame relay connectivity at most of its sites, but its traffic travels over Sprint's IP network. Customers also have the option of upgrading new or existing sites to IP and supporting a mix of network connectivity with all traffic traveling over Sprint's IP network.

By year-end, Sprint also plans on offer its Network Based VPN service in 21 cities around the world. The carrier's Network Based VPN service is primarily a domestic service with some users supported out of Sprint's London POP. ■

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Akamai

continued from page 29

"TV traditionally has been one of those things you can't talk back to. With a Web site for a television station, all of a sudden this is the first avenue people have to talk back to their TVs and, my God, they talk back to their TVs," Abbott says. "A lot of the polls we do are just fluff, but other things are more pertinent to hard news. In those cases we'll get some pretty big flash crowds."

As the polls became more popular, it was resulting in a drain on IBS' back-end infrastructure, Abbott says. He was using ColdFusion running on an array of Dell servers back-ended by an Oracle database.

Today, the Java-based application has been pushed out to WebSphere at the Internet's edge, letting the bulk of the application processing happen within Akamai's servers.

"So I don't have to maintain as much capacity coming back to [my origin] servers, and I don't have to maintain as much database capacity," Abbott says.

The way the Akamai/WebSphere service works is customers take their Java 2 Platform Enterprise Edition-compliant applications and divide them into two tiers, one to run at the edge and one to run at the origin. In IBS' case, there is a small application component that runs at the origin, "but all the logic is really out at the edge," he says.

IBS determines how often the edge servers should check back with origin servers and the database to calculate the latest poll results, Abbott says. While performance hasn't necessarily improved, it hasn't suffered, he says. What's more important is that he hasn't had to add hardware, saving "tens of thousands" of dollars.

"Now I can finally start to feel good about capping my hardware budget and not have to plan for growth in the data center," Abbott says.

While IBS doesn't run WebSphere in-house, using the WebSphere platform at the edge will make it easy to add applications down the road, Abbott says. He says he's looking at pushing other applications — such as quizzes, games and forums — out to the Akamai network.

"With the whole WebSphere communication layer, there is a lot of potential for us to link things a little more closely," he says. "If you look out five or 10 years from now, I really think that we're going to be able to distribute larger chunks of our business logic — our business logic being our content management system — out onto some sort of computing on-demand model and eventually we're going to end up being just a big database."

Abbott says he was somewhat concerned about performance taking a hit with the application processing happening at the edge, but in the month or so that it's been running, things have been going smoothly. All his applications are written in Java today, so moving them to the edge won't be difficult.

"The polling application is my toe in the water. It's one of those things where obviously I wouldn't want to jump all the way to that side of the canoe and have everything roll out on the edge," he says. "But it's like when you first tried Linux. You've got to try it to see what it's about. So far it's a big thumbs up." ■

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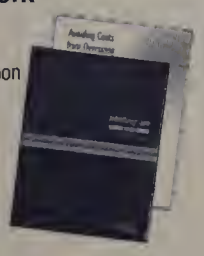

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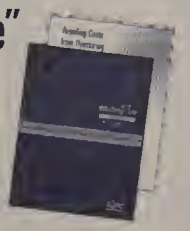

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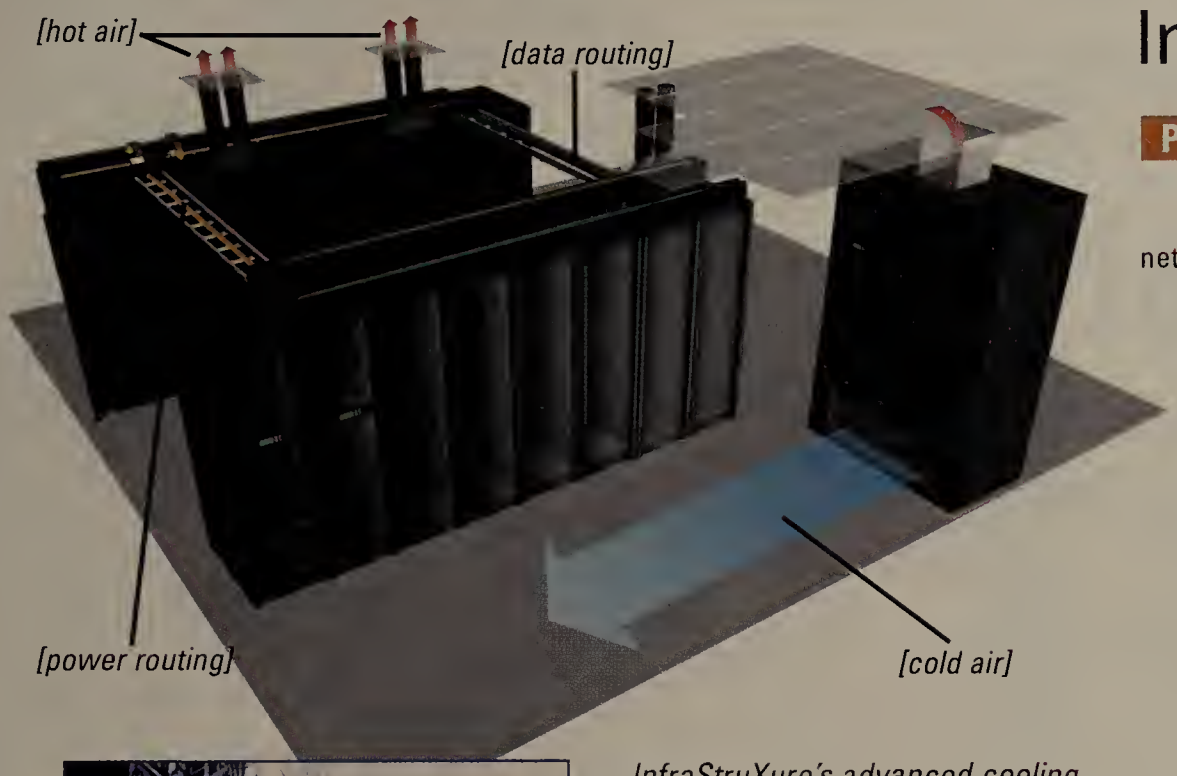


High power densities can create hot spots, which cause equipment failures and expensive downtime.

InfraStruXure's advanced cooling components help remove heat from your servers and target air circulation where it is most needed.

Air components designed for InfraStruXure™ are manageable via network technology, and feature a modern, reliable design with fewer moving parts.

InfraStruXure™

POWER RACK AIR

Open, adaptable and integrated architecture for on-demand network-critical physical infrastructure

"Our Video on Demand (VOD) servers are air cooled from front to back. The APC racks that house the InfraStruXure are also designed to cool from front to back. So the same racks can effectively house our power system and our servers."

Vince Pombo
Vice President of Engineering
Rich Flanders
Director of Engineering
Time Warner Cable

"If I had purchased the incumbent vendor's 3-phase upgrade model, I would have paid 75% more in service costs over the next four years and I would have had to utilize 50% more of my precious floor space."

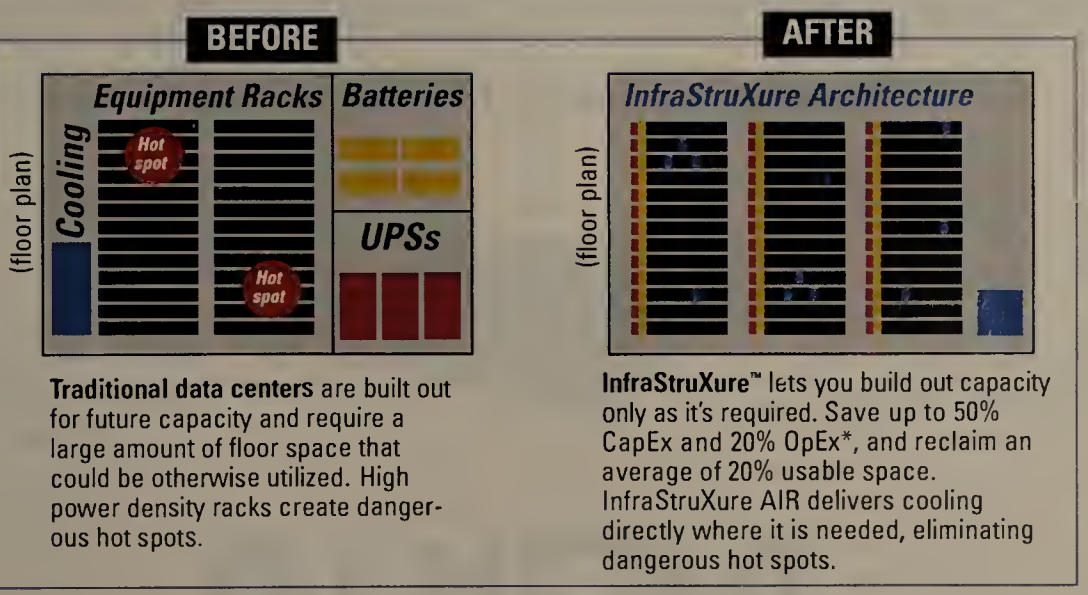
Captain Timothy Riley
Support Services Division
City of Newport Beach Police Department

2002 Readers' Choice — Top 100 Products — Windows & .NET Magazine

2002 Communications Solutions Product Of The Year

Best New Technology Awards at FOSE

Winner of the Windows and .Net Magazine *"2002 Reader's Choice Award for Best High Availability Solution" and the GCN "Best New Technology Award" at FOSE, March 2002. (Awarded to PowerStruXure™, which is now included under the InfraStruXure™ brand.)*



Traditional data centers are built out for future capacity and require a large amount of floor space that could be otherwise utilized. High power density racks create dangerous hot spots.

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DAY
AVAILABLE AROUND THE GLOBE

Well, I was hoping to wear this new suede jacket I just bought, so I'm just kind of keeping my fingers crossed that it doesn't rain today.

IT guy has time to chat

Greg Brown, 33, seen talking freely to co-workers after deploying Nokia Message Protector

"I used to spend most of my day managing all kinds of different security products like anti-virus and spam rejection for our email system," a beaming Greg told reporters at a recent IT industry seminar. "Trying to plug holes between our desktops and gateways, looking after all those scanning technologies, trying to keep them updated — all of that kept me in the trenches. But it changed with the implementation of Nokia Message Protector. Now that we have secured communication paths, spam protection and intelligent

Features
Automatic
Signature
Updates

I can come out of my bunker and get to

all the names of the people in the Finance Department, and some of them are quite cool — I even go to the staff cafeteria at lunch sometimes now. The food's quite boring, but the people I have met are great. It's terrific," was his response to one reporter's

about the automatic signature update feature. "My boss

and greatest

exploit updates, but now I can reassure him, and he can focu

other things. Trying to plug holes between our desktops and

ways, looking after all those scanning technologies, tryin

keep them updated — all of that kept me in the trenches

it changed with the implementation of Nokia Message Prot

My boss had been worried about delays in getting the late

I can reassure him and

Introducing Nokia Message Protector.

Nokia has created a complete purpose-built appliance that integrates innovative security technologies including virus protection from Trend Micro™, with unique Nokia filtering software — known as statistical protection — to deliver new levels of enterprise email security. Nokia Message Protector deploys in minutes and provides secure, automatic updates to optimize

email system integrity. With the ability to process up to 120,000 emails per hour, and the intelligence to control the content that enters, flows through and leaves your network, you can spend more time doing things that matter — like getting to know your colleagues!

If you'd like more time to chat, visit www.nokia.com/get_a_life/americas

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Net.Worker

■ PRODUCTS, SERVICES AND STRATEGIES FOR TYING TELEWORKERS TO THE ENTERPRISE

Residential gateways ready to grow

Smart devices provide remote network configuration and management, deliver new broadband services.

■ BY TONI KISTNER

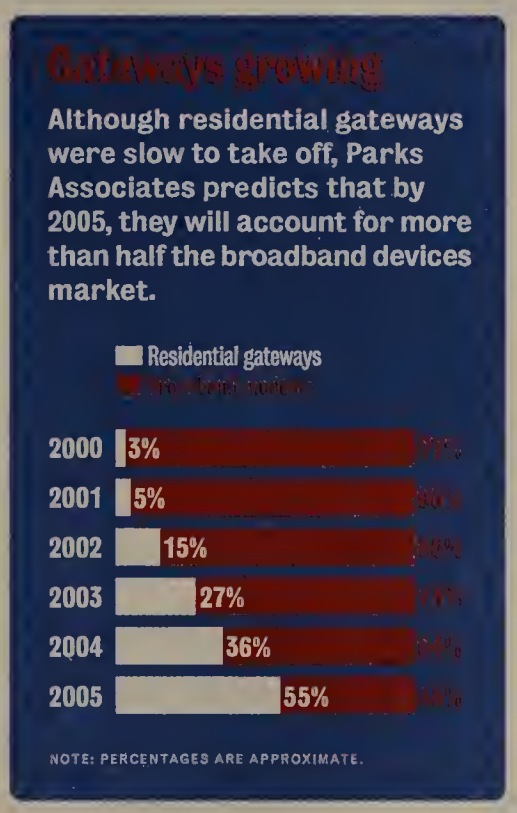
You probably don't give much thought to your remote users' broadband modems. But chances are your network administrators have spent considerable time walking those users through still-tricky wireless router setups and network adapter installations so they could share that connection within the home. The good news is the next-generation broadband devices — smart modem/routers, also known as residential or broadband gateways — are easing home network configuration and maintenance, and getting your staff back handling more appropriate tasks.

A residential gateway is a Layer 3 class device that runs firmware for routing, security and remote manageability. Typically offered as part of a DSL or cable home network package, gateways also include some combination of Wi-Fi, Ethernet, phone line and power line network technology. Remote configuration and management tools let the service provider handle the network details — which reduces support calls and provides a new revenue source in one move. As important, gateways give service providers a platform for providing additional services such as stateful packet inspection, firewalls, parental controls, voice, video and remote monitoring, which are downloaded to the box via firmware. Today, many broadband providers offer home network product and support packages, but most advanced services are still in development.

Residential gateways aren't new — 2Wire, Netopia and others have sold them directly or through service providers for three or four years. But sales foundered and companies disappeared before many service providers signed substantial deals. At a time when providers were focused on gaining subscribers, the gateway's high cost proved unattractive. Plus, providers had spent so much money to upgrade their networks to deliver the services that they bristled at spending more to swap out modems with gateways, even though the benefits were clear.

As such they've faced a Catch-22. "Providers need to roll out advanced devices and generate new service revenue, while keeping capital expenditures as low as possible. But you can't get incremental revenue without upgrading the modems," says Kurt Scherf, an analyst at Parks Associates.

However, several trends working in concert have prompted Parks to predict strong growth, with the number of gateways surpassing that of modems by 2005. Among them are:



• **Home networks enter the mainstream.** By year-end, 20 million people will have broadband access; 11 million will have a home network, according to Parks. This means increasing numbers of non-technical users are calling customer support, pressuring providers to find ways to increase ease of configuration and use.

• **Manufacturing costs drop.** Prices of residential gateways are falling because of less-expensive system-on-a-chip designs and the decreased cost of wireless components. Today, providers can buy modems and gateways for about the same cost, when two and three years ago gateways cost $50 to $70 more each, says Jeff Porter, marketing vice president at Netopia.

• **Push to create gateway standards.** CableLab's CableHome and the DSL Forum's DSLHome both are working to commoditize gateways to decrease the cost to service providers and free them to partner with a variety of gateway manufacturers. Creating gateway standards also opens the market to newer players, such as DSL modem makers Efficient Networks and Westell (which own 53% and 35% of the DSL equipment market, respectively), and small office/home office hardware vendors Linksys, a subsidiary of Cisco; Netgear, SMC Networks and others.

Linksys sells a cable gateway that uses the CableHome 1.0 specification to Comcast, Cox Communications and Time Warner Cable. CableHome provides the built-in auto-configuration and remote management. DSLHome, although a bit behind, is developing a similar standard in its Working Texts 82 and 87.

2Wire and Netopia say their mature software platforms set them apart. But what they call mature and advanced, others call proprietary. 2Wire's back-end management system makes it extremely easy to deploy and manage DSL gateways, and its platform is poised to deliver whatever services that provider partners want. In time, the DSLHome group makes similar capabilities standard fare.

In addition to back-end tools, Netopia's Porter stresses the sophistication of its Netopia parental control application, which isn't just for families with school-age children. The network management application lets the home IT manager set up user profiles, and monitor and control the Web sites each user visits.

Matt McRae, Linksys director of broadband, agrees. "DSLHome creates a commodity market, but then you innovate on top. There are good parental controls and bad ones," he says. Another differentiator will be voice capability, a feature McRae says Linksys is uniquely positioned to deliver, by building products using its technology and that of its parent Cisco.

Even so, all residential gateway makers are developing software applications or partnering with others to deliver them. And because users buy or rent gateways from their service providers, choice is limited. The residential gateway market likely will grow large enough to maintain a handful of vendors, although it might favor DSL and cable equipment manufacturers, and a company like Cisco/Linksys, which has established provider partnerships. But when standards are in place, your users won't care who makes their box, only that it works reliably and delivers the applications they want. ■

Short Takes

■ Despite increased consumer awareness, only 3% of U.S. Internet subscribers have used Wi-Fi hot spots, and a "negligible number" have subscribed to hot-spot services, according to a recent study by **Parks Associates.** The study refutes other estimates that put the number of hot-spot subscribers at 5 million in North America and says the "most optimistic estimate" of the number of users in 2003 won't exceed 2.5 million.

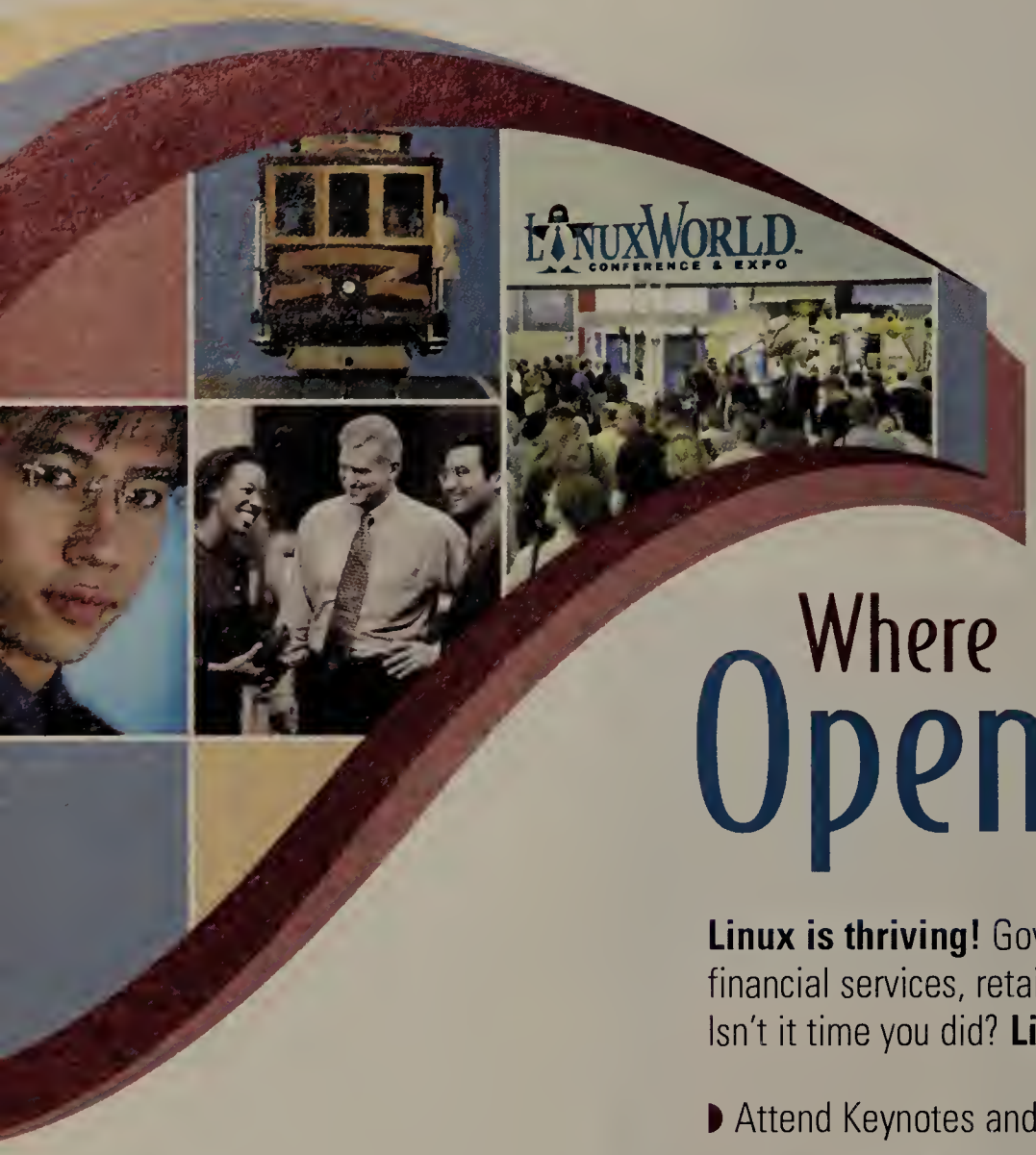
■ **Linksys** last week debuted the first product of its new Wireless Home products, the **Wireless-B Media Adapter.** The device connects to the TV and/or stereo, and lets you listen to and view digital music and photos residing on your PCs over a wireless 802.11b or 10/100M bit/sec Ethernet connection. Linksys plans to include support for playlists from Listen.com, MusicMatch and Rhapsody. The Wireless-B Media adapter includes A/V and S-video cables and an infrared remote. It costs $200.

■ **SMC Networks** recently launched a similar line of home entertainment network products. Built in collaboration with **Philips and Accton,** they include the Universal Wireless Multimedia Receiver, which distributes audio, pictures and streaming video via 802.11a/g. The Wireless Multimedia Receiver costs $249 and is expected to ship Aug. 1. Later next month SMC plans to ship the Universal Wireless Broadband router, which includes a cable or DSL modem and 802.11a/g wireless connectivity, and an 802.11a/g wireless USB adapter.

More online!

See what Efficient, Netopia, 2Wire and others have planned for their gateways.

DocFinder: 6836



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Technology Update

■ AN INSIDE LOOK AT THE TECHNOLOGIES AND STANDARDS SHAPING YOUR NETWORK

Apps switches boost availability

■ BY ERIK GIESA

Layer 7 load balancing devices, also known as Web or application switches, can drill down into URLs or HTTP headers to direct requests. An emerging technology, deep packet inspection, allows these switches to gain an even better view of content.

Web switches act as proxies for Web applications and servers sitting behind them. Users can virtualize an unlimited number of back-end Web applications and servers, providing better availability, scaling and performance. If an application or switch goes down, the switch directs client sessions to fail over to other available applications and servers without interrupting the client.

Non-HTTP-based applications or transactions would benefit from the same horizontal-scaling model. Many applications never use HTTP, and others might use HTTP only as the transport, such as Web services. Traditional Web or application switches can't do the job because HTTP is the only type of traffic they can act upon.

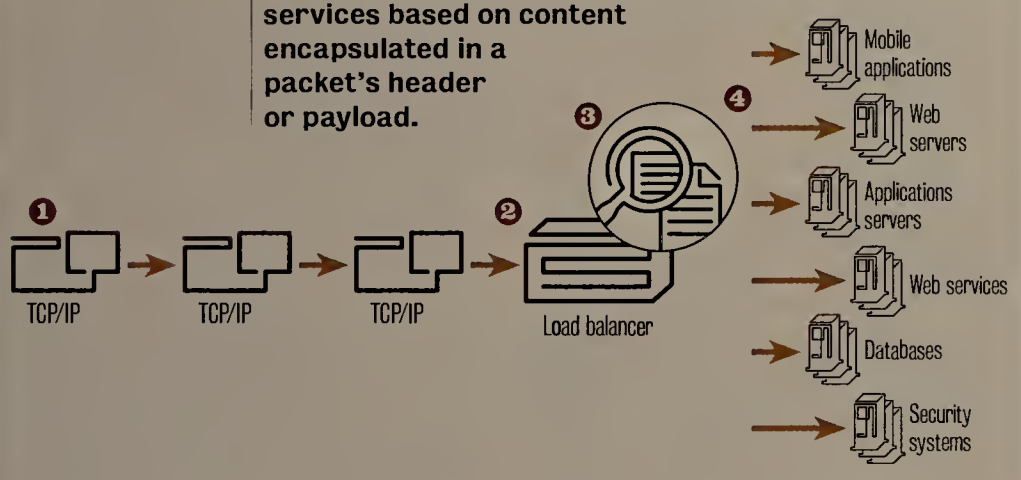
To extend the benefits of horizontal scaling to all IP applications, the load-balancing device needs to inspect deeper than the URL or HTTP header and into the IP datagram. Now companies can use the same architecture for non-HTTP back-office applications to provide the same economies of scale and operational efficiencies that traditional load-balancing devices have provided.

Deep packet inspection addresses this problem. This technology directs, persists, filters and logs IP-based applications and Web services traffic based on content encapsulated in a packet's header or payload, regardless of the protocol or application type. With deep packet inspection in place through a single intelligent network device, companies can boost performance without buying expensive servers or additional security products.

■ HOW IT WORKS

Deep packet inspection

Deep packet inspection directs, persists and logs all types of applications or Web services based on content encapsulated in a packet's header or payload.



❶ Data is broken down and packetized as it moves across the network.

❷ Load balancer reconstructs original content in correct sequence.

❸ Load balancer inspects application traffic for any data in the TCP/IP stream or UDP packets.

❹ Load balancer then directs traffic based on application type, category and priority to the server that can best process it.

Complete view

Deep packet inspection lets the application traffic management device delve into the content of a TCP or User Datagram Protocol (UDP) flow for a complete view. This is accomplished by reassembling IP datagrams, TCP datastreams and UDP packets as they flow through the device to view the entire application content and then act on it according to a company's defined policies.

Through standard TCP/IP networking, messages are broken down into small packets so they can quickly traverse the network. The application traffic management device or load balancer intercepts the data on its way to the final destination, reassembles it into its original sequence and buffers it into memory.

By acting as a partial proxy for specific application data flows, the traffic management device continues to build the message so that more content can be seen, while searching for defined variables on which to act. Users configure these variables in a rules or policy engine that enforces those polices based on the application type, its source or its final destination.

Optimum transit

Once the traffic management device locates the information in the payload, it sends the data to the application or resource that can best process the client's request. The application traffic management device then can virtualize or horizontally scale any IP-based application. Deep packet inspection also can be used to inspect transactions for correct application or service variables. If these variables aren't present, the request is discarded, the event is logged and an alert is sent to an administrator.

Because deep packet inspection can recognize any element of a packet, it can be used to manage traffic for any type of IP-based application, including enterprise applications such as CRM, databases, mobile and wireless applications, and Web services. At a large company, for example, a traffic manager with deep packet inspection capabilities could be used to distinguish between read and write traffic to database servers. The company could save money by purchasing less-expensive servers to handle the read traffic.

Deep packet inspection provides detailed control of all IP traffic, letting businesses meet complex security and high-availability requirements while gaining operational efficiencies.

Giesa is senior director of product management for F5 Networks. He can be reached e.giesa@f5.com.

Ask Dr. Internet

By Steve Blass

Our cable provider has limited our upload rate. If visitors take files from us beyond 10K byte/sec, the connection is automatically disconnected for a month. Can we limit the upload rate so we don't get disconnected?

You might be able to configure your cable modem to perform bandwidth throttling. Check if your modem downloads its configuration at boot time from the service provider, or if you can adjust the bandwidth-limiting settings yourself. Other options depend on how you deliver files. Microsoft Internet Information Server Web servers have bandwidth-throttling options in the IIS property sheet and in Web site property sheets. Apache servers can use the Squid proxy to limit bandwidth; and Linux can provide bandwidth-control capabilities through IPChains and IPTables settings.

If you deliver files via a peer-to-peer network, check the software for bandwidth control settings. WinMX can limit upload and download through the bandwidth window; Kazaa lets you control bandwidth through the Tools/Options/Advanced menu. Go to www.nwfusion.com, DocFinder: 6899, for MicroTik RouterOs, a free router operating-system software package that can turn a PC into a dedicated router and bandwidth-shaping gateway.

Blass is a network architect at Change@Work. He can be reached at dr.internet@changeatwork.com.

GEARHEAD INSIDE THE NETWORK MACHINE

Mark Gibbs

Potpourri for geeks

This week we have a few odds and ends to clear up. First, regarding the Python programming language that we did a series of columns on, reader John Gay wrote: "It might be elegant, but it looks like a troubleshooting nightmare. Structuring code for readability makes sense, but embedding intelligence in indents takes us back to the 80-column punch card days, when spaces mattered a lot."

We must disagree on the issue of the difficulty of debugging Python — in our experience and from comments and discussions in a number of books we have on the language, Python is relatively straightforward to debug. In many ways Python is much easier when tracking down those really thorny problems because you can modify the code so easily and it supports mechanisms that let you "get inside" the Python system.

According to Alex Martelli and David Ascher, the authors of the excellent *Python Cookbook*: "The introspective and dynamic nature of Python ... means that your opportunities for debugging are limited only by your imagination. You can replace functions at runtime, add methods to classes and extract everything about your program that there is to know. All at runtime, and all quite simple and Pythonic." They attribute this to be the result of Python's creator's "we are all consenting adults" philosophy of programming.

Python Cookbook, a fairly in-depth book for competent Python aficionados, has a whole and indispensable chapter (Chapter 14) on the topic of debugging and testing. What you learn from this and other books that discuss Python application troubleshooting is that Python exposes its internal mechanisms in a way that most other languages cannot.

As for Python's requirement for structuring by using indents, it does take a little getting used to but the upside is that once you're used to it, your code is remarkably readable. And it is not at all like working with 80-column punch cards, a gruesome way to program that still has us waking up in the middle of the night sweating (remember that endless punch, run, fail, re-punch, drop on the floor, sort out, run, fail, re-punch again routine?).

While we're on the topic of books about Python, we should mention a few others that are terrific and arguably indispensable. First, there's *Learning Python* by Mark Lutz and David Ascher, which is one of the best books for learning the language. It starts with the language basics, passes through object programming and winds up with some useful and instructive examples that demonstrate complicated application techniques. It also contains a good introduction to a cool version of Python implemented in Java called Jython (which they refer to as "JPython" for some reason).

Two other Python tomes we should recommend are *Python in a Nutshell* by Martelli, a terser introduction than the *Python Cookbook; Python Pocket Reference 2nd Edition* by Lutz, which no self-respecting Python programmer can be without; and the megawork, *Programming Python*, 2nd Edition, by Lutz, which, at more than 1,000 pages, is not only an impressive achievement but also will teach you some really hard-core Python programming techniques.

Finally, having mentioned Jython we must point to *Jython Essentials* by Samuele Pedroni and Noel Rappin, an exploration of the language showing how it integrates efficiently and powerfully with Java as a way of creating scripting and applets.

Still on the topic of Python although it relates to Perl, Tcl, PHP and Extensible Stylesheet Language Transformation (XSLT) as well, we should direct you to take a look at Komodo (www.nwfusion.com, DocFinder: 6991). Komodo is an awesome integrated development environment from ActiveState that supports multiple languages along with multi-document editing, syntax-checking and coloring, code-folding and autocompletion.

Komodo also features a graphical debugger, remote debugging, Common Gateway Interface emulation, XSLT debugging and, if that wasn't enough, tutorials. Actually, there's a lot more than that to Komodo, but we'll leave it up to you to check it out.

Finally, we must mention the latest release, Version 8.0, of Ipswitch's WS_FTP Pro. New in this version are support for firewall and network address translation, Secure Sockets Layer, Secure Shell, SOCKS4 and SOCKS5 Proxy Support; Active Edit, letting you locally edit files on remote FTP sites; and HotDrop, which lets you transfer files or folders to predefined sites by dragging and dropping files into HotDrop folders.

Drop your thoughts on gearhead@gibbs.com.

CoolTools

Quick takes on high-tech toys

By Keith Shaw

Procom launches 'instant' hot spot appliance

Network-attached storage vendor Procom Technology last week announced availability of its $1,700 Taurus network appliance. The "all-in-one" appliance includes a wireless access point (802.11b), sharing of Internet access, data storage, built-in firewall, file sharing, printer sharing, e-mail server, VPN support and network routing, the company says. Procom says it is aiming the box at small and midsize businesses — including schools, hotels, libraries, malls, airports and convention centers — that want to set up hot spots quickly.

The Taurus network appliance is aimed at small and midsize companies.

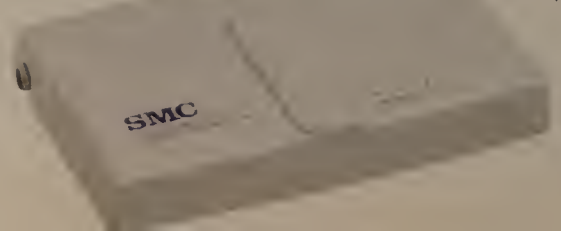
The device includes a built-in hard drive with up to 250G bytes of storage space. It can be managed via a Web-based configuration utility, and Wired Equivalent Privacy (WEP) encryption is supported.

SMC offers enterprise-level wireless products

SMC last week announced an enterprise-level wireless access point and CardBus (PC Card) adapter. The $500 EliteConnect universal wireless access point and $90 CardBus adapter include support for 802.11a, b and g wireless LAN connections. SMC says the products will be available next month.

The access point (SMC2555W-AG) can support up to 128 simultaneous users, SMC says. It can be managed through a Web browser or SMC's SNMP-based EliteView management software. Security features include support for Wi-Fi Protected Access (WPA), 802.1x authentication, support for Funk Odyssey, and RADIUS server and RADIUS media access control address authentication.

The PC card (SMC2536W-AG) includes multiple-user profile support and has site-survey software that can detect access points. The card also supports WPA, 64-, 128- and 152-bit WEP encryption, as well as 802.1x, EAP-MD5, EAP-TLS, EAP-TTLS, EAP-PEAP and LEAP for authentication.



SMC's enterprise-level access point supports 802.11a, b and g standards.

A miniature mouse with better tracking

IOGear last week launched a new mobile mouse, the USB Optical Mini Mouse 800. The $29.95 peripheral is aimed at mobile travelers who want a smaller optical mouse, but with higher precision than other devices. The Mini Mouse 800 offers users a choice of 400-, 600- or 800-dot-per-inch resolution. The higher resolution lets users get more accuracy with their mouse pointing, IOGear says.

The Mini Mouse 800 is smaller than a credit card (3.5 by 1.5 by 1.75 inches), and supports computers with Windows 98, 98SE, 2000, ME and XP, and Mac OS X or later.

Sub-$1,000 Tablet scheduled for September

TDV Vision said last week that its V800XPT Tablet PC would be available in September. The $900 tablet includes an 8.4-inch color LCD screen, a Transmeta Crusoe 800-MHz processor, a 30G-byte hard drive, and 128M bytes of DDRAM upgradable to 512M bytes. The tablet weighs 2.6 pounds and comes with a battery pack that provides up to 2.5 hours of battery life (rechargeable and removable). Other features include a built-in digital camera (640- by 480-dpi resolution), a four-in-one expansion card reader, and built-in Ethernet LAN ports and modem ports. The tablet runs on the Tablet PC Edition operating system, and includes two USB 2.0 ports.

Mini Mouse 800's higher resolution provides more accuracy.

TDV Vision also announced a $1,000 version, the VS1200XP, which includes a 14-inch display, weighs about 4 pounds with 6 hours of battery life, and comes with Windows XP Home or Professional. This model includes a VIA Antaur 1.2-GHz processor, 30G-byte hard drive and 256M bytes of DDRAM. This model also will be available in September, the company says.

Shaw can be reached at kshaw@nww.com.

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EDITORIAL

John Dix

Calling VoIP hosters, CPE players to VON

Just a few weeks into summer weather in New England after a protracted, cold spring and already we're thinking ahead to fall. More specifically, it's time to consider the Fall Voice on the Network show, which is being held Sept. 22-25 in Boston.

And if we're talking VON, we're talking a Network World Voice over IP Showdown, where we invite leading VoIP vendors to wrestle with the important questions of the day.

This will be our fourth Showdown at VON. In the first one in Seattle we invited some of the top IP PBX makers to argue about the merits of their various products. Then it was off to Atlanta where we had IP PBX vendors square off against IP Centrex service providers (the audience gave the debate win to the Centrex camp). And this spring we invited the core IP PBX players back to discuss just what it is that makes their products stand apart.

For the Fall VON we thought we'd somewhat revisit the idea of VoIP being delivered as a service because frankly, at the time of the earlier debate, the IP Centrex market was just gelling. Today, there are more bona fide players with real experience under their belts and paying customers.

But rather than pitting a group of these service providers against a group of equipment makers, as we've done previously, this time we'll assemble a panel with both service providers and box makers, and let them each fend for themselves.

As the VoIP market matures, equipment vendors will compete not just with each other, but with incumbent local exchange carriers and hungry new upstarts peddling virtual offerings.

As such, we call on Cisco, Avaya, Nortel, GoBeam and M5 Networks to send top technical representatives to VON for the next installment of our VoIP Showdown.

While the first three players don't need any introduction, GoBeam and M5 might be new to you. GoBeam offers what it calls a virtual PBX service through a string of local dealers, and it wholesales service through some big names such as Verizon. M5 offers what it calls a Managed Telecom Service, primarily in the New York area.

These vendors have until Aug. 25 to confirm their participation, after which we will open the door to other players.

So mark your calendars for Sept. 23 for this VoIP Showdown in Boston, and in the meantime drop me a line about the topics you would like to see us tackle.

— John Dix
Editor in chief
jdix@nww.com

opinions!

IT still matters

Regarding your editorial "Revisiting core IT strategies" (www.nwfusion.com, DocFinder: 6826): I appreciate your comments qualifying the conclusions of the *Harvard Business Review* story negating IT to non-strategic infrastructure. For further proof, look at the story "Server consolidation helps JetBlue soar" (DocFinder: 6827) in that same issue of *Network World*. I cannot think of a worse industry to be in than technology, except for the airline industry. Yet here is one of the few success stories — a company aggressively applying new technology.

Your advice is right on target — sell senior management on the need to increase the strategic contribution of IT. And aggressively invent ways to introduce and apply it strategically in your organization, as exemplified by JetBlue CIO Jeff Cohen.

Peter Weyant
CEO and managing partner
BeachChip Technologies
St. Pete Beach, Fla.

I agree with your comments on Nicholas G. Carr's *Harvard Business Review* story "IT doesn't matter," but you were too kind and reserved in your criticism. I was amazed that a publication of HBR's stature would publish Carr's story without questioning his sloppy research and syllogistic reasoning. Savvy CEOs with critical thinking skills will see through Carr's faulty analogies and erroneous generalizations, but I fear that some senior line-of-business managers will use Carr's thesis to support their view of IT as a back-office function that is two levels removed from their core business processes.

For example, Carr confuses grid computing with IBM's on-demand services — if you're not an IT person, it's easy to accept that as a fact. If you are unfamiliar with Web services, you might not question Carr's assertion that it will be simple for all businesses to purchase Web services for all of their business processes in the near future.

However, it's Carr's business analysis that is the most misleading. He talks about best practices being built into infrastructure and leaves the reader with the impression that all IT functions have thus been addressed by infrastructure technology. This flies in the face of repeated stories on business strategy from Michael Porter, also in HBR, which emphasize that best practices alone are not enough to sustain competitive advantage — you must add value. Good IT management squeezes as much cost as possible out of infrastructure expenses, but that doesn't mean innovative IT applications are no longer needed. Every CEO today needs to know that how IT is done will be more of a competitive differentiator, not less; if they accept Carr's advice, they will dig themselves into a deep hole vis-à-vis their competitors.

Martin Moderi
President
Six Sigma Technologies International
Lisle, Ill.

Abetting criminals

Johna Till Johnson's column "Debt, dividends and the postbubble telecom universe" (DocFinder: 6828) tells what I projected would happen when the bankruptcies were announced. It shows not a tilt toward risk, but a tilt toward totally dishonest behavior. WorldCom and Global Crossing should have been allowed to fail, with the honest companies picking up the service. Every time our government protects and then gives contracts to these companies, it is aiding and abetting criminal behavior, and stealing money from those who have invested in honest companies. If this is the American way, it stinks!

Bill Scheerer
Morganville, N.J.

E-mail letters to jdix@nww.com or send them to John Dix, editor in chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

More online! www.nwfusion.com Find out what readers are saying about these and other topics. **DocFinder: 6823**

TOTALLY UNPLUGGED

Ira Brodsky

Debunking the hot-spot hype

For a host of sociological, technological and business-model reasons, Wi-Fi hot spots are not a viable substitute for 3G mobile phone networks.

Industry analysts forecast spectacular growth for public wireless LANs, also known as Wi-Fi hot spots. Some proponents go even further, suggesting Wi-Fi hot spots spell doom for mobile phone operators' third-generation wireless technologies.

There are so many things wrong with this thinking I hardly know where to start. There is a niche market for Wi-Fi hot spots in airports, hotels and convention centers. But for a host of sociological, technological and business-model reasons, Wi-Fi hot spots are not a viable substitute for 3G mobile phone networks.

When Wi-Fi advocates assure users they will never be more than a 5-minute drive from the nearest hot spot, it's like telling them to throw away their mobile phones and go back to using pay phones. They forget the greatest benefit of wireless is freedom of movement.

Mobile phone operators enjoy several key advantages. Wi-Fi hot spots primarily serve notebook PC-toting business travelers and techies. 3G mobile phone networks also serve mobile handsets, which are about 10 times as numerous. Mobile phone operators simply can overlay wireless data capability on their existing networks, offering customers package deals with one monthly invoice.

Hot-spot proponents counter that Wi-Fi offers higher data rates, will soon be a standard feature on most notebook PCs, and is already popular in offices and homes, and on campuses. All of this is true. But it still doesn't add up to a substitute for 3G mobile phone networks.

With today's WLAN technology, more than 700 Wi-Fi hot spots would be required to cover the same area as one mobile phone base station. Assume a nationwide mobile phone network consists of 10,000 base stations. It would take 7 million Wi-Fi hot spots to provide the same coverage. The equipment costs might be comparable, but the back-haul costs for 7 million Wi-Fi hot spots would be astronomical.

Wi-Fi aficionados raise two objections to this analysis. First, they insist it is not necessary to duplicate mobile phone coverage. I agree: People don't lug notebook PCs everywhere. But it would be a mistake to conclude that there aren't high-speed applications for mobile phones (music and video on demand will be huge) or that there are never high-speed notebook PC applications outside predictable locations.

Second, they claim technology enhancements — often involving so-called smart antennas — will multiply the range of Wi-Fi hot spots. But you can't get something for nothing. Longer range requires more expensive equipment, antenna towers and greater traffic capacity. As hot spots approach mobile phone ranges, mobile phone technologies become the better fit.

There are many other issues. Wi-Fi operates in unlicensed spectrum and is vulnerable to interference. Users can roam to other hot spots, but they often need to log on manually and even submit credit card payment when they do. And few (if any) Wi-Fi hot-spot operators have figured out how to make money.

Yes, there is a very nice niche market for Wi-Fi hot spots in airports, business-class hotels and convention centers. But as a substitute for 3G wireless, Wi-Fi doesn't stand a chance.

Brodsky is president of Datacomm Research Co. in Chesterfield, Mo. He can be reached at ibrodsky@datacommresearch.com.

REALITY CHECK

Thomas Nolle

When number portability goes wireless

Let's face it, no carrier really cares much about the 'public good'; they care about the private profit.

One of the many factors that regulators have introduced to increase competition in voice telephony is the concept of number portability. Because many customers are reluctant to change phone numbers in order to change carriers, number portability is key to an open market in wire-line voice. The FCC has set Nov. 24 as the deadline for number portability to be applied to wireless phones.

Much has been said about the technology involved in number portability, and frankly, most users aren't interested in how it works. So instead of looking at the direct technical issues, I want to explore what wireless number portability (WNP) might mean to the carrier market.

Almost everyone in the industry acknowledges that profitable voice communications is moving to wireless. Wireless phones are convenient, offer simple and powerful fixed-price dialing plans, and have the kind of cool features that young consumers demand. Until now, wireless phones have been more immune to churn, or customer changes in carrier, in part because number portability hasn't applied to wireless. Now that it will, what will happen?

First, the thing that binds the average customer and wireless carrier together is a contract, not lack of number portability. The fee to get out of these contracts is formidable, so even portability isn't going to induce those under contract to switch.

This means getting users to sign contracts will be a high priority. About 25% of wireless customers are well beyond their contract period, and fully 50% have either no contract or less than a year's contract to run. WNP is going to push carriers to work to re-sign these customers, luring them with signing bonuses such as free high-end phones. Enough new gadgetry could be promoted this way to revive the moribund handset industry, but how might the carriers be affected by the costs of WNP and the competition it creates?

Push them to data, maybe. Let's face it, no carrier really cares much about the "public good"; they care about the private profit. DSL is essential to the regional Bell operating companies because it provides a profit boost, and content services are interesting to interexchange carriers and RBOCs alike for the same reason. As long as carriers can reap dependable profit margins from wireless voice services, there's less incentive to try that strange new world of consumer broadband. Make wireless voice less attractive, and broadband could become more attractive.

Even broadband wireless? That's the big question. The ultimate differentiator in wireless is broadband, and current wireless trends, such as built-in digital cameras, could create applications for fast data connections to a portable handset. If wireless carriers decide to use phone features to induce customers to sign new contracts, data is a good feature to include in the package. But if WNP is expensive, what's cellular broadband if not super-expensive?

Which brings us to the endgame. It's likely that WNP is going to reverse the trend of spinning out cellular business from wireline business because factors such as WNP and broadband wireless are tending to move the wireless and wireline networks in a converging direction. We already have local number portability in the wireline space, and we already have at least a broadband commitment. There are already many common elements between wireless and wire-line networks, and WNP is only going to increase them.

Is this good for data, for broadband? In the long term, it's certain to be. In the short term, there's the risk that Wall Street, still antsy about investing in telecom, will punish the carriers if they try to take on too much at once. Until the financial markets get over the fright of the bubble, carriers might have to choose between upgrading wireless and providing broadband. Too bad, but too true.

Nolle is president of CIMI Corp., a technology assessment firm in Voorhees, N.J. He can be reached at (856) 753-0004 or tnolle@cimicorp.com.

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An Executive Summary
Produced by IDC

IDC Perception Survey on Security Services

Summary Report

The constant barrage of vulnerabilities and threats, expanding complex networks with multiple points of access, together with more stringent regulatory requirements are drastically affecting the way organizations approach risk mitigation. Simultaneously, businesses require information security solutions to seamlessly integrate into the network, ensure scalability, and provide a measurable return on investment. Consequently, organizations are faced with challenging decisions in light of increasing complexities and risk, which necessitate security requirements that often lie outside their core competencies and available resources.

Written by Allan Carey, program manager for Information Security Services at IDC

Security as part of the total IT budget still remains in the single digits, but the percentage allocated is increasing year over year.

In late 1999 and 2000, there was an influx of boutique IT consulting firms with the primary mission of addressing the security risks of enterprises. Many of these security services firms were well funded with venture capital, but relatively small and unknown in the marketplace. At the same time, security practices were being developed within larger, more established providers of network and communications services. Both the young and the old service providers were rapidly going to market with new offerings for everything from ethical hacking and penetration testing to implementation of security products to management of point solutions.

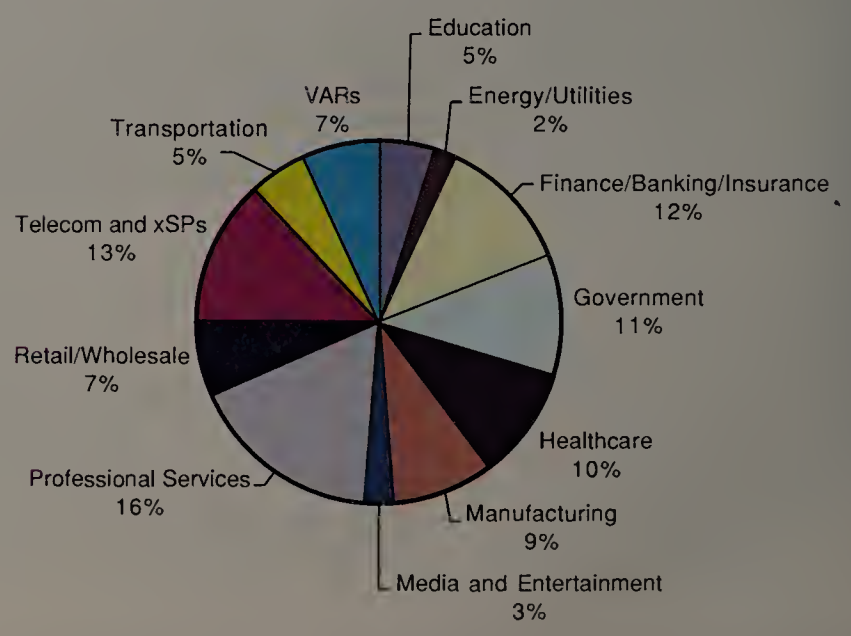
During the past couple of years, the market for information security services has matured considerably. Providers have honed their services portfolios and advanced their solutions to meet the growing and ever-changing demands of their customers and the marketplace. In alignment with those demands, security services firms continue to develop offerings to address new technologies such as wireless and web services, while at the same time locking down and protecting existing technologies and infrastructure from new threats and vulnerabilities. However, with many different vendors providing a multitude of services, the market appears to be unclear as to which vendors provide information security services, the types of services rendered, and who is perceived by the marketplace as a leader at delivering those services.

Therefore, IDC and NetworkWorld teamed together to conduct a study on the purchasing trends and business requirements for information security services, in addition to the perceptions of vendors providing such services. The study was conducted in early 2003 and consisted of 153 decision-makers from organizations representing various company sizes and vertical industries. One common thread among all respondents is their participation in the decision-making process for technology purchases. Each respondent has a role in purchasing a variety of IT hardware, software and services, including security.

From a company size perspective, respondents with 1 to 99 employees (small) made up 29.4% of the survey population, medium-size business (100 to 999 employees) represented 19.6% and large enterprises (1,000 or more employees) represented 51% of those surveyed. With regards to company revenue, over 48% of the respondents generated less than $100 million in revenue. Another 28% had between $101 million and $1 billion in revenue, and 24% reported more than $1 billion. From an industry perspective, respondents came from the following sectors (see Figure 1).

FIGURE 1

Breakdown of Respondents by Industry



Source: IDC, 2003

In order to gain a better understanding of where enterprises are today in their deployment and use of security services, respondents were initially asked if they use an outside security service firm(s) for any aspect of their security assessment, policy, integration, management & monitoring and training needs. Almost half (46.4%) indicated they are currently engaged with a third-party provider of security for some aspect of their security requirements. Another 49.7% said they do not use an outside provider.

In addition, enterprises were asked about their IT security budgets and the allocation split between, not only products and services, but salaries and other expenses related to securing the business. Table 1 illustrates the differences in IT security budget allocations based on company size.

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INTERNET
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SYSTEMS

End-users can be
a powerful first line
of defense against attacks,
if properly trained.

TABLE 1

Security Budgets by Category by Company Size

	Small	Medium	Large
% of IT	8.2%	9.6%	7.6%
Products	49.0%	35.5%	34.9%
Services	13.0%	20.4%	21.0%
Salaries, etc.	30.0%	36.4%	37.0%
Other	8.0%	7.8%	7.1%

Source: IDC, 2003

Security as part of the total IT budget still remains in the single digits, but the percentage allocated is increasing year over year. Clearly, large and medium enterprises dedicate more dollars toward third-party services and salaries of internal IT staff than small companies, which appear to be more heavily focused on security products (49% of the IT security budget). These results support the notion that small businesses are seeking more of plug-n-play security solutions, such as appliances, which require a lesser degree of integration. Overall, businesses are dedicating approximately one-third of their security budgets towards the hiring, training and retaining of skilled IT security professionals. Looking at the future, respondents were cautiously optimistic about their outlook for spending on security. Nearly half suggested the budget would remain the same for next year, while another 40% indicated their spending on IT security would increase on an average of 18%.

With more than 20% of their budgets, in the cases of medium and large enterprises, dedicated to security services, what types of services are they currently utilizing to augment their internal staff? According to the results, the most frequently used services by organizations are for security and/or privacy policy development (78%), review or assessment of enterprise security readiness (72%), and security strategy and planning (70%). The high frequency of these services being contracted suggests a few market needs. First, enterprises are looking for help deciphering regulations such as HIPAA which would drive change or creation of policies. Second, organizations are requiring an external, independent assessment of their risk posture and incident readiness as validation for work performed and, possibly, for compliance with internal and external requirements being placed upon them. Lastly, enterprises have deployed and integrated a variety of point solutions to solve problems at particular points in time. Where today, businesses are demanding a better return on their investments and better integration of point solutions to increase their security and thwart potential points of exposure. Hence, a strategy is necessary to align future business goals with the appropriate security protection which will enable the goals to be achieved.

At this point, the least utilized services by respondents are managed security services (34%), incident response and forensics (35%), and identity management services (38%). However, that's not to say these services are unattractive or not valuable to enterprises. The notion of managed security services has been around for quite some time, but the market adoption has been slower than anticipated. Increasingly, enterprises are evaluating — often realizing — the benefits of outsourcing components of their security. In fact, a global financial services company recently signed a multi-year, multi-million dollar contract to outsource the management and monitoring of selected security functions. IDC expects this area to be one of the fastest growing segments of the information security services market. Additionally, many organizations view incident response and forensics capabilities as a "nice to have" rather than a "must have" security measure, but when an unexpected situation arises, they will be necessary for remediation and auditing of the event. Also, the area of identity management services is relatively new to the marketplace. Yet, these services are rapidly gaining acceptance in the marketplace due to the attractive ROI and increased risk management, for example, associated with implementing such a solution.

Some of the new areas where companies generally acknowledged they will be investing their security budgets during 2003 are identity management solutions/services (previously mentioned), vulnerability analysis and penetration testing, assessments of web applications, and security awareness training. Enterprises of all sizes realize they must invest more time and resources towards educating their end-users about the risks and pitfalls of computing and the appropriate behavior expected of them when using IT services such as email and the Internet. End-users can be a powerful first line of defense against attacks, if properly trained.

In fact, end-user and management awareness of security issues was mentioned by respondents as one of the top inhibitors to achieving adequate security. Other inhibitors included lack of management support and buy-in for security-related initiatives, the lack of information and metrics to build a business case or ROI study, and the absence of a corporate governance structure which would be responsible for implementing and enforcing security policies. Although the results indicate that as much as one-third of respondents believe management support and buy-in is a hindrance, another one-third expressed that management was not a challenge to achieving proper security. Needless to say, the most frequently mentioned challenge to corporate security today is the lack of budget and funding for security personnel and projects (see Figure 2).

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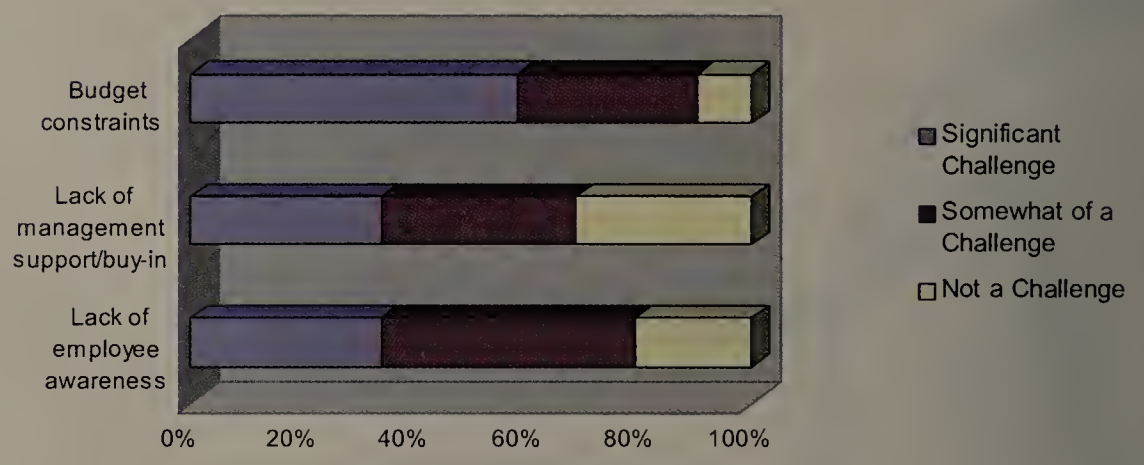
Lack of budget continues to be the biggest hurdle to achieving adequate infosecurity.

FIGURE 2

Top 3 Challenges to Achieving Adequate Security



Source: IDC, 2003

Since enterprises are often short-handed and too overwhelmed to execute security-related projects or they may not have the skill sets necessary to perform specific projects, they are seeking security expertise from firms outside the organization. There are many different types of security service providers, including the professional services firms, pure-play security firms, systems integrators, telecommunications providers, and the services arms of technology companies, which can be confusing for enterprises to determine who is the most appropriate person for a particular engagement. Thus, which security services firm do enterprises recognize as their security expert and trusted partner?

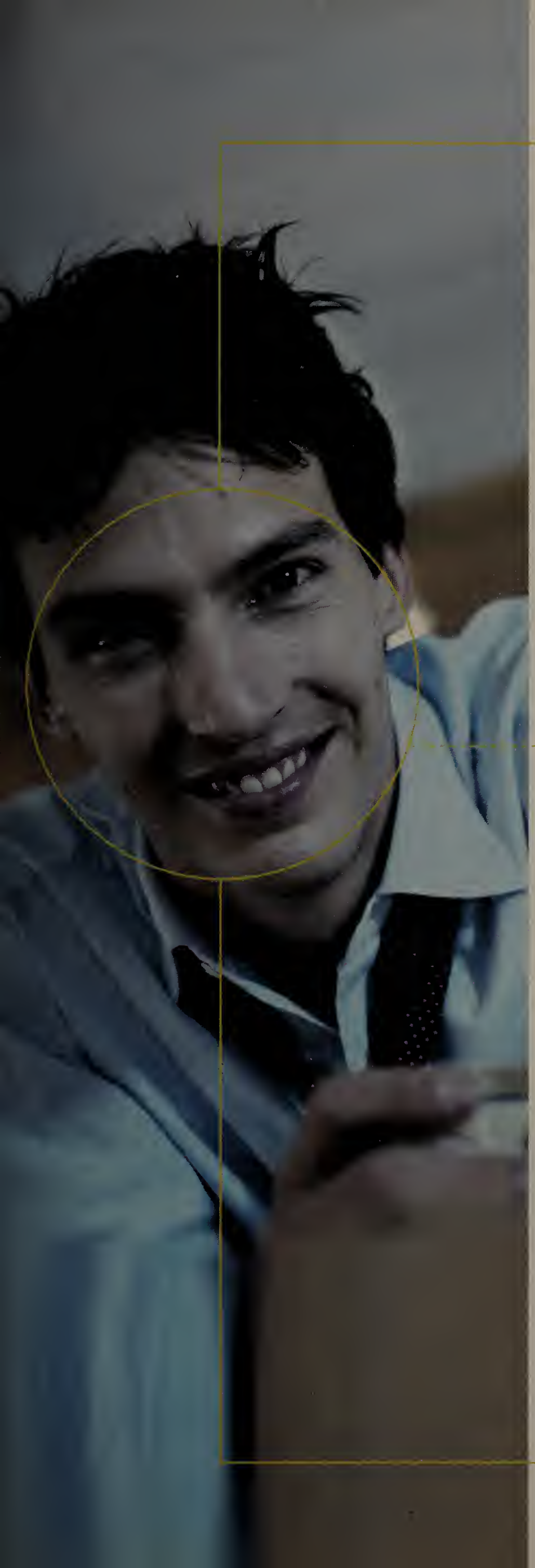
IDC tested the perceptions of enterprises and asked them to identify who they would use for a particular security service. The results indicate and enforce the impression that enterprise customers are not in consensus as to which type of security service provider is the most appropriate for a specific security engagement. However, nuances surfaced as to preferred vendors for companies of specific sizes. For instance, large companies tend to gravitate towards the systems integrators and professional services firms, in many cases, for their security needs. For three of the thirteen service activities presented, security and/or privacy policy development, an assessment of enterprise security readiness, and security architecture and design, more than one-third of respondents preferred to work with a systems integrator, such as HP or an IBM Global Services. In situations where large enterprises need assistance with their security strategy and planning, many preferred to engage with a professional services firm, such as Ernst & Young, KPMG or PricewaterhouseCoopers. When medium size businesses were asked about the same series of security service activities, the results were noticeably different. This segment of the market appeared to be more heavily dependent upon the services arms of technology providers, such as ISS or Symantec, and their value-added reseliers for various types of security services. Medium size enterprises indicated their occasional willingness to work with a systems integrator during an engagement for integrating security products or solutions. Overall, the results surprisingly revealed that the telecommunications companies were consistently the least mentioned service provider an enterprise would turn to for security services.

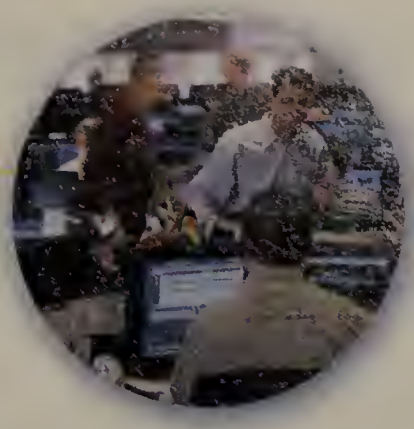
Prior to 2003, at least a quarter of the respondents had previously worked with large systems integrators, professional services firms, telecommunications providers, and the service arms of technology companies. Those receiving high response rates for "previously worked with" were companies such as AT&T, HP, IBM Global Services, Internet Security Systems, and Symantec. Even if respondents had not worked with many of the security service providers previously, results indicated they were at least familiar with most of them. The companies receiving high response rates for familiarity were Computer Sciences Corp., Deloitte & Touche, EDS, Ernst & Young, HP, KPMG, PricewaterhouseCoopers, and Unisys, for instance. The firms garnering the least amount of brand recognition among respondents were the security pure-play firms, which are firms only providing security services. Some of the names mentioned were @stake, Guardent and RedSiren. On average, pure-play security services companies were unfamiliar to more than 55% of the respondents.

Moreover, the majority of survey respondents had difficulty identifying any one particular firm as best-in-class for providing a variety of different security services. More than half of respondents could not name one particular firm as best-in-class for providing security awareness training, for instance. This trend was consistent across many types of security services. Therefore, not only do enterprises have to better educate their end-users about security, information security services firms must better educate the marketplace about their capabilities and successes in securing and proactively protecting enterprises.

ABOUT THE AUTHOR

Allan Carey is the program manager for Information Security Services research at IDC. In this position, Mr. Carey provides in-depth market analysis, research, and consulting on key aspects of the information security services industry to technology vendors, systems integrators, service providers and consulting organizations.





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Examining you

In this, our fifth annual You Issue, we investigate your job, salary, future and free time

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From clamping down on improper Web use to flushing out file-swappers, you're often cast as the company enforcer. Here's how some of you deal with the image problem.

Cover illustration by Tim Gabor

The Signature Series

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Steve Eager NFL Films

you work where?

WE VISIT NFL FILMS AND THE SAN DIEGO SUPERCOMPUTER CENTER FOR A LOOK AT TWO OF THE COOL PLACES YOU WORK.

Carrying football footage

Convergence is the big play at NFL Films, where Network Director Steve Eager made the call to merge voice, video and data on a new IP infrastructure.

BY BOB VIOLINO

Walk into the headquarters of NFL Films and you get a sense of achievement. A lobby display showcases dozens of Emmy Awards for sports programs. Move through the building and signs of creativity abound: Editors work busily on film footage while technicians prepare a sound stage for an audition. And, of course, football is everywhere — from cafeteria trays bearing images of gridiron greats to hundreds of photos of star players and memorabilia lining the walls.

Just the place for an unabashed football fan who has a background in creative writing — Steve Eager, director of network and systems administration. Eager says he thrives in this setting, and his professional achievements bear that out.

Eager joined NFL Films in December 1994, when the IT "infrastructure" was a minicomputer and three stand-alone PCs and the entire IT department comprised himself and the CIO, Dave Franza. Since then, Eager has helped NFL Films shift to networked PCs and Macs for production, managed the construction and operation of temporary computer networks at five Super Bowls, and designed the network at the new 200,000-square-foot headquarters complex in Mount Laurel, N.J., the company opened last September.

See NFL, page 52

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NFL
continued from page 49

Eager, 40, began his career in 1985 as a credit analyst at First Fidelity Bank. Intrigued by a program used to analyze financial statements, Eager worked to improve its reporting capabilities. That took him to the MIS department, where he developed various financial reporting programs. "It was far more interesting than analyzing financial statements," he says.

Not nearly as interesting as the work he's done in his eight years at NFL Films, though. Eager came to the National Football League subsidiary as a systems analyst, and quickly took on greater responsibilities as NFL Films began relying more on PCs and networking. Today, Eager manages six of the 16 people, including three contract workers, now comprising the IT department.

Eager says designing the new corporate network has been his biggest challenge. Whether you're editing a film or developing the corporate network, NFL Films management inspires people to be creative and take chances.

The philosophy is, "If you're going to fail, fail spectacularly," Eager says, quoting Steve Sabol, president of NFL Films.

Bearing that in mind, Eager shunned traditional network approaches that kept data and voice distinct, and built a Cisco-based converged 1G bit/sec Ethernet backbone to carry voice, data and video applications over an IP infrastructure. 1G bit/sec links reach out to the company's 25 Windows NT and 2000 servers and 100M-bit/sec connections to 325 user desktops. A VPN secures remote access.

"A lot of places wouldn't let you put voice, data and video over the same line. No one questioned that here," Eager says.

It's this attitude, and more, that Eager says makes him feel very much at home at NFL Films. "It's a very relaxed environment, which makes it easy to work here," he says. Plus, the creative writer in him likes working around film editors, cameramen and artists.

Besides football, Eager loves music. He listens to all types and has more than 800 CDs in his collection. A power lifter, Eager munches on a protein bar as he provides a tour of a computer room with servers named for famous NFL coaches and players.

His demeanor reflects the culture of the organization — relaxed yet passionate about the work. NFL Films has documented thousands of games since the early 1960s. And now, with the help of a desktop application Eager developed, employees can search digitized footage of games to locate particular plays, camera angles, even weather conditions.

The relaxed atmosphere of the office contrasts sharply with the "big event" of the year — the Super Bowl — for which Eager must set up a 100M-bit/sec Ethernet LAN in a trailer park outside the host stadium. The film crew works in about 20 production trucks in the compound, on 70 workstations, to support delivery of a live satellite feed to all international broadcasters covering the game.

Eager arrives at the site about 17 days before the game, handling everything from laying cable to ensuring that the network is secure and stable. He uses industry-standard security, and Cisco Works and What's Up Gold for network monitoring. An outside vendor handles physical security — "Suffice to say, it's extremely tight."

Eager's most memorable Super Bowl was the 2000 game in Atlanta, where a freak ice storm wreaked havoc on operations.

"It was 35 degrees with freezing rain, and we were riding around in golf carts running fiber," Eager recalls. "Those were the most challenging two weeks I've spent in this job."

When the game starts Eager and his staff are on call, but they can relax because their work is essentially done. "People say, 'Wow, you get to go to the Super Bowl every year.' But it's a grinding pace," Eager says. Still, he wouldn't want to work anywhere else.

Violino is a freelance writer covering business and technology. He can be reached at rviolino@optonline.net.

"It was 35 degrees with freezing rain, and we were riding around in golf carts running fiber. Those were the most challenging two weeks I've spent in this job."

Steve Eager
Director of network and systems administration, NFL Films; recalling the 2000 Super Bowl in Atlanta.

Phil Andrews | San Diego Supercomputer Center

Built for power

Champion powerlifter Phil Andrews, acting network director at the San Diego Supercomputer Center, makes sure the TeraGrid research network can crunch massive amounts of data.

BY TERRY SWEENEY

Phil Andrews is no stranger to heavy lifting. To prove it, he'll show you the latest rankings from *Powerlifting USA* magazine, which ranks him No. 2 in the U.S., after hefting 837 pounds at a competition in Las Vegas.

Small wonder, then, that the National Science Foundation (NSF) asked this guy to oversee more than 500 terabytes of storage capacity for TeraGrid, which will be the fastest, most computationally rich research

See SDSC, page 54

"It's not hard to put all these terabytes together. The challenge is to integrate it and make it really useful for as many people as possible."

Phil Andrews
Acting network director at the San Diego Supercomputer Center

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SDSC
continued from page 52

network in the world when it goes live early next year. Andrews clearly knows how to deal in big volume, whether it's in the gym or inside the San Diego Supercomputer Center (SDSC) where he works, on the campus of the University of California at San Diego.

In addition to the supercomputing center in San Diego and one in Pittsburgh, TeraGrid connects two sites in Illinois — the National Center for Supercomputing Applications in downstate Champaign and Argonne National Laboratory, outside of Chicago in Argonne. It also connects to the Center for Advanced Computing Research at the California Institute of Technology in Pasadena.

The TeraGrid backbone between Internet hubs in Chicago and Los Angeles screams along at 40G bit/sec, with links from the those two main nodes to the five sites operating at 30G bit/sec. Fiber capacity from Qwest and gigabit routers from Juniper make up the major pieces of the TeraGrid network.

Massively large data

TeraGrid will deliver access to 20 teraflops (trillion floating point operations per second) of computing power, facilities capable of managing and storing nearly 1 petabyte (1 quadrillion bytes) of data, high-resolution visualization environments and toolkits for grid computing. Researchers will tap the TeraGrid to run applications such as biomedicine, global climate and astrophysics research.

"This will move scientific research into areas it hasn't gone before," Andrews explains, because scientific modeling data can be massive.

Data is coming from a variety of sources such as microscopes, telescopes and sensors, all generating terabytes of data. The NSF's National Virtual Observatory already keeps its digitized map of the night sky at SDSC.

SDSC's role is to "crunch and store," Andrews says, meaning his organization will provide processing power and data storage. Inside TeraGrid's storage network at SDSC, three Brocade Communications SilkWorm12000 switches will sit in front of the 500 terabytes of data. Using Fibre Channel over IP, SDSC should be able to write 10G byte/sec, while its tape drives will write at 1G byte/sec. That's at least one exponent above most storage systems.

Before now, computing grids were overlaid on existing networks. But because TeraGrid is being built specifically for grid computing, developers can ensure all components are appropriate and as powerful as budgets will allow, Andrews says. He predicts that this sort of distributed processing and storage across the WAN will be the model for future networks, whether research or corporate. "The future of grid computing is in providing these kinds of data services. We just have to figure out the best ways to ship so much data across the network," he says.

"TeraGrid will deliver access to 20 teraflops (trillion floating point operations per second) of computing power, facilities capable of managing and storing nearly 1 petabyte (1 quadrillion bytes) of data, high-resolution visualization environments and toolkits for grid computing."

More online!

- **Find out what working at The Kodak Theatre, home of the Oscars, is like in another "You work where?" profile.** You'll meet the Kodak's technical director, Alys Holden, who has learned to give production companies a wide berth for their production needs — and to keep out of the stars' way.

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Power schooling

Andrews' background is well suited to the challenges ahead. He brings impressive academic credentials to bear with degrees from Cambridge, Purdue and Princeton. He's experienced with artificial intelligence, 3-D software, visualization, archiving, digital libraries and computational medicine. He's worked at the Pittsburgh Supercomputer Center and is now high-end computing program director and acting networking director at SDSC, where he's been since 1997, and the site's TeraGrid lead.

While Andrews admits to difficulty in balancing work and personal life, he pursues some starkly contrasting interests to storage, computing and networking. For one, there's the competitive powerlifting, which he began after doing the hammer throw in college. "You've got to move the blood from the brain to the muscles," Andrews says.

In training for a December competition, he'll kick his weight up 15 pounds to 265, which explains the four boxes of protein and energy bars above his desk. He points out the window to an adjacent building — the UCSD athletic center — where he lifts about three hours a week when he's training.

And Andrews is a published poet, with odes to England's faded glory ("Stand Not Upon Your Order") or the wrong way to leave the house ("Today I Killed My Cat"), for example.

What's true for stanzas is true for storage. "It's not hard to put all these terabytes together," Andrews says. "The challenge is to integrate it and make it really useful for as many people as possible." That's just the sort of heavyweight thinking TeraGrid needs.

Sweeney is a Los Angeles writer and editor who has covered IT and networking for 20 years. He can be reached at terry@tsweeney.com.

SHARP

Digital Document Security and IT: Everything you need to know.

Q: What are the most significant digital copier security issues?

A: Various copier print controllers are actually servers that queue and permanently store multiple document files, providing administrator access to the documents. At a minimum, most digital copiers retain the last document processed; some even retain multiple documents totaling hundreds of pages. Others redirect print jobs when the printer is busy or jammed, making "denial of service" attacks possible.

Q: How does Sharp protect the network interface?

A: The Sharp Ethernet card allows administrators to restrict access and disable unnecessary protocols. With this network card, the Sharp digital copier is essentially protected by its own firewall.

Q: How can you be sure that security products actually perform as claimed?

A: The Common Criteria program—administered by the U.S. National Security Agency and the National Institute of Standards and Technology—evaluates security solutions. Products that are validated under the program meet security levels consistent with ISO 15408 methodology.

Q: How can Sharp improve IT security?

A: Sharp offers print privacy solutions designed to restrict unauthorized personnel from seeing confidential materials. Copier access can be controlled and monitored, while documents retained in printer/copier/scanner/fax memory are immediately cleared to eliminate unauthorized access.

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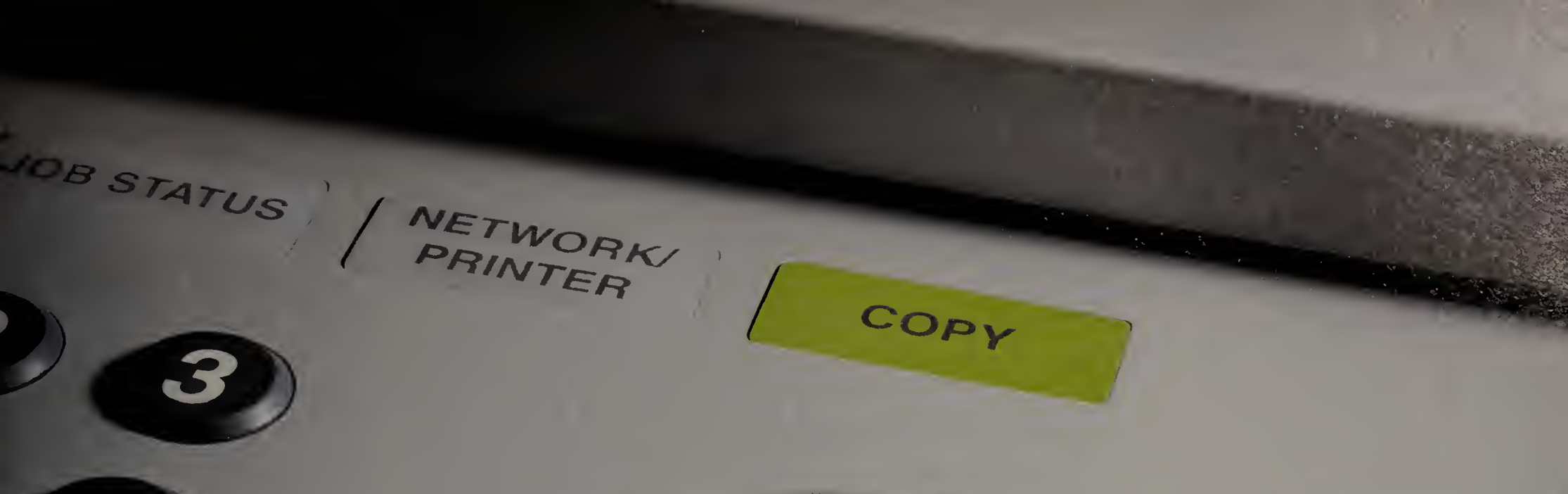

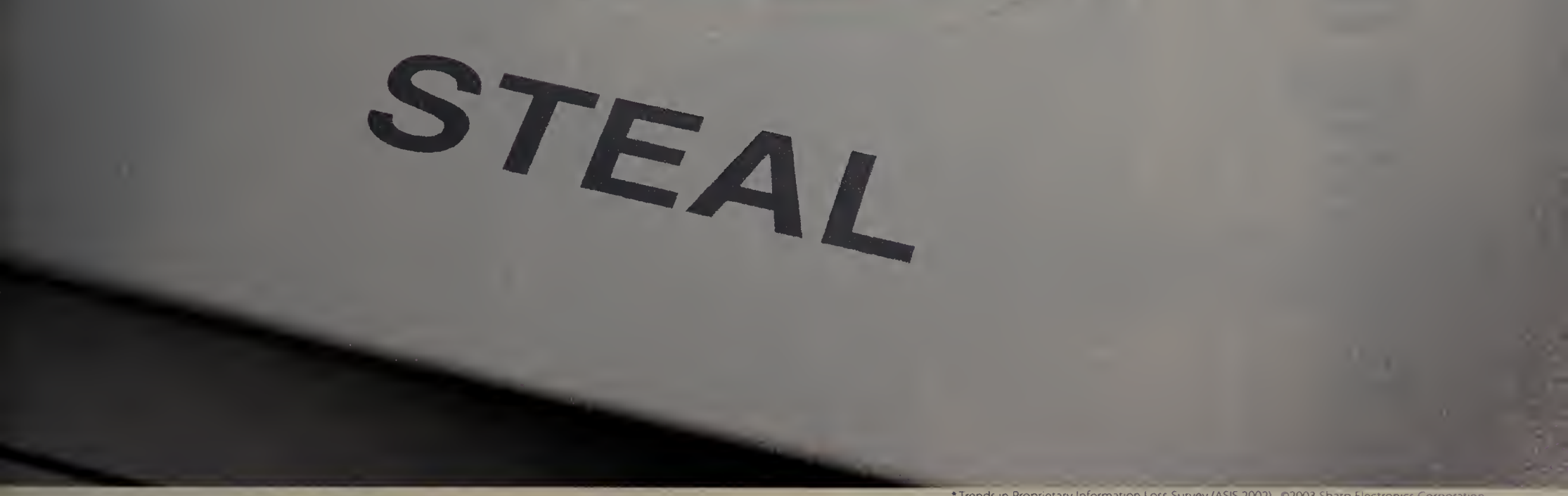

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How secure is your digital information?

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What's weighing on you?

Security and employee management remain perpetual worries, yet our annual Top Concerns survey reveals a more optimistic you.

BY JULIE BORT

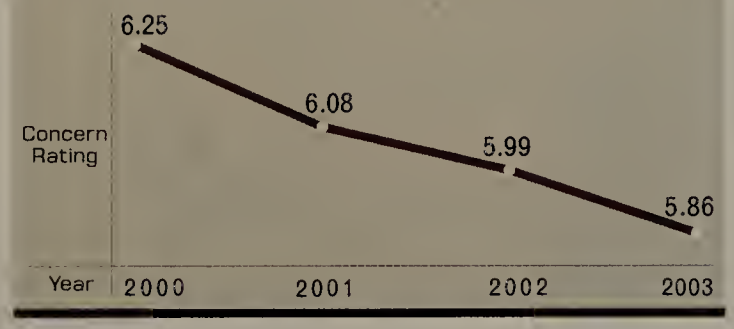
Despite strained IT budgets, the continued onslaught of network security threats and general industry doldrums, network executives today are less anxious about major aspects of their jobs than they have been in years. That's one of the findings from our fourth annual Top Concerns survey.

Results show that network executives are less worried about technology, managing employees and projects, their careers and industry health than they were last year. And their concern has been dropping steadily since the feverish days of 2000. This year, the overall Concern Rating dips to 5.86, down slightly from last year's 5.99 but significantly from its height of 6.25 in 2000 (see "Less worried, overall," right.)

We obtained the Concern Rating by asking 100 enterprise network executives to rate their level of concern over 37 technology, management and career issues on a scale of 1 to 10, with 10 being the highest level of anxiety. In the survey, conducted with the help of Research Concepts, respondents also told us which of four areas — technology, management of employees/projects, their careers or health of the network industry — concern them most and least. Although respondents are more worried about 14 items, concern for 12 of those increased only slightly (less than 10%) over last year. The Concern Rating for only one item — "supporting wireless devices" — increased by more than a full point. Its 2003 Concern Rating is up 1.05 points at 6.19, from 5.14 in 2002, a 20% gain.

Less worried, overall

According to the survey average, respondents are less concerned today than they have been since the start of the survey in 2000.



The only other item significantly more prominent on your radar is "opportunity presented by employment with a network vendor." Its Concern Rating rises to a moderate 5.09 from a low 4.38 in 2002, a 16% increase. This reflects more of an open-minded attitude toward long-term career development than a harbinger of a pending mass exodus to vendor-related jobs, several respondents explained.

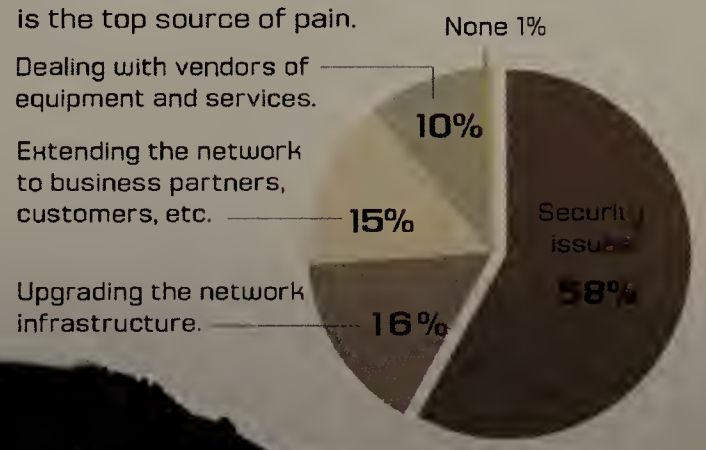
"Securing the network from hackers" remains your top concern for the third consecutive year. In fact, your top worries are similar to those of last year with two curious exceptions. "Securing reasonable budgets for projects" drops to a moderate 6.84 in 2003 from its 7.98 high in 2002, a 14% decrease. While respondents remain occupied with project management, they have adjusted to the constant pressure for high return on investments, recognizing it as the same pressure that business peers feel. Explained one respondent, "Everybody is thinking about the budget and the amount that we have to spend — getting the most bang for the buck."

Of the 20 items with decreased year-over-year Concern Ratings, eight drop by 10% or more (for the full list, visit www.nwfusion.com, DocFinder: 6833). Despite the turmoil in the network industry, "managing outsourced contracts" drops the biggest percentage — 21% — to 3.83 in 2003 from 4.87 in 2002. Likewise, "costs of salaries/benefits for employees" takes a nosedive to 5.76 in 2003 from 6.96 in 2002, a 17% decline. Both areas, respondents said, are a result of the tight economy. In the former instance, the drop in concern reflects the significantly improved leverage network executives have with vendors. In the other, it reflects a freer job market for employers, with little pressure to beef up salaries, benefits and perks.

The latter data dovetails the findings of our 2003 Salary Survey, which shows that employees are increasingly more desirous of job security than of fat paychecks during these rocky economic times. ■

The technology headache

45% of respondents named technology the general area of most concern. Of them, most say security is the top source of pain.



Juggling your worries

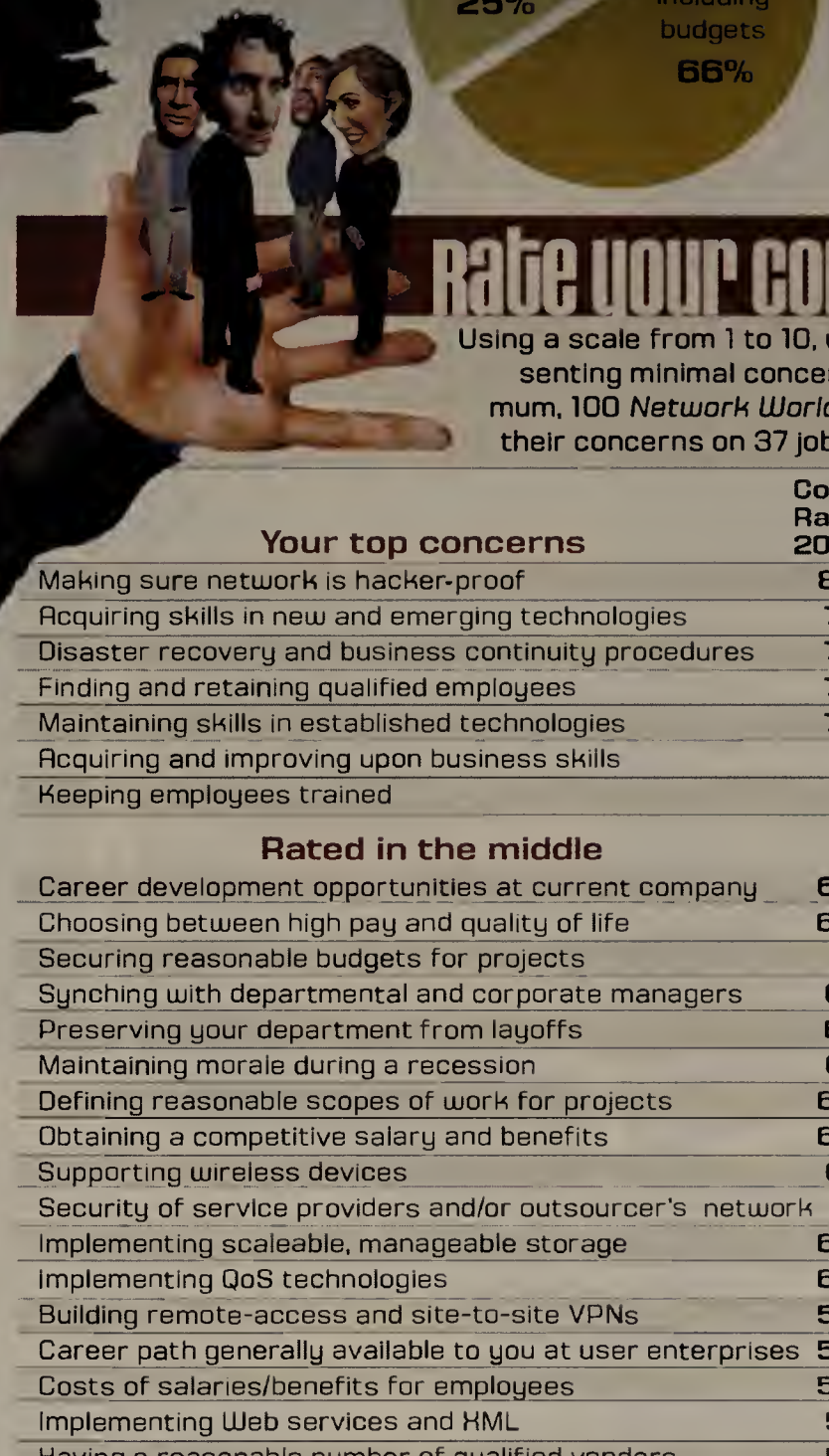
Network executives shoulder a wide range of daily responsibilities, from keeping the network secure to determining staff workloads. Our annual Top Concerns survey queries 100 of them on which of their responsibilities are most pressing. This year, technology issues generate the most concern with management, network industry and career issues trailing.

Getting a hand on careers

Despite the tough economy, only 9% of respondents named career as their top concern. Of

Juggling people and projects

30% of respondents named management their top concern. Of them, most say project management is the toughest area.



Rate your concerns

Using a scale from 1 to 10, with one representing minimal concern and 10 maximum, 100 *Network World* readers rated their concerns on 37 job-related items.

Your top concerns	Concern Rating 2003	Concern Rating 2002
Making sure network is hacker-proof	**8.33**	8.20
Acquiring skills in new and emerging technologies	**7.76**	7.88
Disaster recovery and business continuity procedures	**7.48**	7.22
Finding and retaining qualified employees	**7.30**	7.23
Maintaining skills in established technologies	**7.24**	7.42
Acquiring and improving upon business skills	**7.17**	7.51
Keeping employees trained	**7.15**	7.48
Rated in the middle		
Career development opportunities at current company	**6.98**	6.72
Choosing between high pay and quality of life	**6.84**	7.32
Securing reasonable budgets for projects	**6.8**	7.98
Synching with departmental and corporate managers	**6.81**	7.22
Preserving your department from layoffs	**6.74**	N/A
Maintaining morale during a recession	**6.71**	6.95
Defining reasonable scopes of work for projects	**6.67**	6.82
Obtaining a competitive salary and benefits	**6.24**	7.04
Supporting wireless devices	**6.19**	5.14
Security of service providers and/or outsourcer's network	**6.14**	6.12
Implementing scaleable, manageable storage	**6.09**	5.97
Implementing QoS technologies	**6.07**	6.38
Building remote-access and site-to-site VPNs	**5.97**	5.59
Career path generally available to you at user enterprises	**5.79**	6.02
Costs of salaries/benefits for employees	**5.76**	6.96
Implementing Web services and XML	**5.14**	4.78
Having a reasonable number of qualified vendors	**5.13**	5.69
Opportunity prsented by employment with a network vendor, etc.	**5.09**	4.38
Costs of outsourcing	**5.08**	4.87
Obtaining bonuses and stock options	**5.07**	5.68
The lowest concerns		
Convergence of voice and data	**4.85**	4.77
Implementing and managing PKI systems	**4.70**	4.51
Integrating e-commerce and e-business applications	**4.70**	5.53
Building and maintaining supplier management systems	**4.62**	4.43
Finding outsourcers that can handle the tasks	**4.45**	4.45
Developing applications for mobile devices	**4.43**	4.14
Migration from 10/100 Ethernet to Gigabit Ethernet	**4.03**	4.23
Managing outsourced contracts	**3.83**	4.87
Replacement of your staff with outsourced service	**3.83**	4.29
Implementing managed services such as ASP services	**3.66**	3.80

For demographic information on survey respondents, visit www.nwfusion.com, DocFinder: 1432

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JASON GROW

Donald Sternfeld, network chief at Boston law firm Ropes & Gray, doesn't mess around when it comes to ethical software use. "If it came out in the press that we were doing something unethical or illegal, we could lose clients. It's not worth it."

Making your decisions ethical

Even the most principled net execs see shades of gray in software licensing, vendor billing mistakes and other business issues that challenge their values.

BY JOANNE CUMMINGS

Each new business day brings challenges that test values and shape character, especially in this era of tighter budgets, shortened project cycles and cutthroat competition. How do network executives ensure that their shops stay ethical?

"Sometimes it's a tough call to know the right thing to do," says Dieter Marlovics, CIO at Gelber Group, a Chicago brokerage firm. "That's why ethics is such an important topic to discuss. You for the most part know what you should do, but when it comes right down to it, what would you really do?"

The most common ethical dilemmas network professionals face have to do with software licenses and digital copyrights.

"The nature of digital information makes it difficult for people to see it in the same moral category [as physical property]," says Caroline Whitbeck, an ethics professor at Case Western Reserve University in Cleveland and director of the school's Online Ethics Center for Engineering and Science. "If you steal someone's pencil, they don't have the pencil anymore, but if you copy their software, they still have the software."

Winn Schwartau, president of The Security Awareness Company and a computer ethics expert, agrees but adds that enforcement is also an issue. "Nobody really knows if you have the right number of licenses in place. And very few companies actually get audited, so the temptation to cheat is there," Schwartau says.

We asked several network executives what they would do if they learned they didn't have enough software licenses to accommodate their users, but also knew no money was available to purchase more. Most said they would either find a way to purchase the software or go without. "If I found out, we'd license it," says Donald Sternfeld, a CIO who oversees networking at Ropes & Gray, a Boston law firm. "We just don't do illegal software here, ever."

Sternfeld says he ensures users can't load unapproved software by locking down their desktops, and he makes sure the firm stays current on licenses in his crafting of software agreements. "We have licenses where you 'true-up' annually," he says. "Once a year, you take an inventory of everybody using a product, and you purchase what you need. That's totally within the terms of the agreement."

In a law firm, ethics aren't optional, he says. "We're held to high standards. If it came out in the press that we were doing something unethical or illegal, we could lose clients. It's not worth it," he says.

At Gelber, employees are held responsible. "We establish upfront that illegal software is not condoned here," Marlovics says. "If people don't listen and someone gets caught, that person is responsible." If the company is fined, the person who copied the software is responsible for the payment, he says.

Others say practical considerations take precedent. "Our problem was Microsoft [Office] licensing," says Tom Rohde, director of technical services for Wells Dairy, an ice cream company in Le Mars, Iowa, and runner-up in our 2002 User Excellence Award competition (www.nwfusion.com, DocFinder: 6825). "We purchased new hardware but we couldn't purchase the software licenses for it at the time. The money wasn't there. But we kept track, and when our software agreement with Microsoft came due, we bought what we needed to become current and then some."

What makes situations like the above example difficult is that people tend to view ethical dilemmas as us vs. them. "People look at who's the potential loser. If it's a corporation that will lose a few dollars, then the hell with it. If it's an individual who's going to suffer, people will go out of their way to be righteous," Schwartau says.

Erik Towt, network analyst for the Denver Broncos, agrees. He points to digital music and unauthorized downloading and sharing of MP3 files. "Users think it's them vs. Metallica. They don't see it's not only a legal copyright issue, but also a bandwidth issue and a security issue, and it affects them personally," he says.

When Towt finds users illegally using software or sharing music, he strictly enforces company policies, but he also works to make sure users police themselves. "We push whatever button works with people to get a good outcome," he says. "If that's the morality button, great. We tell them this really isn't right and what they're doing is illegal. If that doesn't work, maybe we'll push the security button and let them know that by using something like Kazaa [for file sharing], they could open up a hole in our network and the Oakland Raiders could get access to our plays."

Pushing the self-interest button usually works best, Towt says. "You can explain that if they get all this stuff off the network, it will make the performance better, and that's usually what gets them. They need something tangible," he says.

Still, it's one thing to enforce policies on end users. It's another having to police your peers on the network staff. Dennis Peasley, information security officer for Herman Miller, a furniture manufacturer in Zeeland, Mich., faced that problem.

Herman Miller officially prohibits the use of Kazaa and MP3 sharing. "But I found a server used by the network guys that had questionable stuff on it," Peasley says. "It turns out that one of the guys I work with really closely had put a fairly large amount of stuff there. Maybe he had taken one of his DVDs and backed it up there, but I don't think that's what happened. So I had to think, what do I do?"

In the end, Peasley had his friend remove the data. "We don't allow it, and if I find a share open that has questionable files on it, we have to shut it down, even if it's a friend," he says. "If you don't enforce policies for everyone, what good are they?"

Beyond friendship, money is at the root of many ethical dilemmas. We asked users what they would do if they found a mistake in their favor on a large service bill. Would they notify the vendor and rectify it?

It depends on the situation, users say. "If I get a bill from a vendor with a mistake, I actually think ethically that the problem isn't mine," Ropes & Gray's Sternfeld says. "If I send a bill to a client, that client has every right to expect the bill I sent is accurate. If I screw up, it's my fault."

Gelber's Marlovics hedges. "The right thing to say is you bring it up to them, but let's be realistic," he says. "The chances of something being that obvious that you catch it, especially if you get billed regularly, are pretty small. Still, if you do spot it, and your relationship with the vendor is very important, you should let the company know because it will foster better relations."

Gelber experienced a similar situation when its accounting department sent an invoice with a check for payment to the wrong vendor. "It was for $100,000," Marlovics says. "That vendor could have just deposited the check, and we wouldn't have known any better. But it chose to tell us. The vendor got a lot of goodwill there, and we'll do more business with it because of it."

What about ethics toward customers? We asked the executives what they would do upon discovering their consumer Web site had been hacked and customer credit card numbers compromised.

Wells Dairy's Rohde says it depends on the number involved. "If you're talking in the thousands, it would be difficult. If it's just a couple of hundred, I would say contact them and let them know. If you don't do that, there's a chance you could lose your whole customer base," he says.

Others say you should tell everyone, no matter how many customers are involved. "If they find out later that you were hacked and you didn't tell anyone, it's almost worse than going through [the process of] telling everyone in the first place," Gelber's Marlovics says.

It would be harder if you took the problem to upper management, and it decided against informing the customers. "That would be tough," the Bronco's Towt says. "In the end, it doesn't affect me and I know about this instance with the credit cards. But I'd have to wonder — what don't I know about? I'd rather think that whoever I'm working for is truly honest, and that I don't have to worry about them anymore than they have to worry about me."

Herman Miller's Peasley agrees. "If the boss were to tell me to do something immoral, I couldn't do it," he says. "One of the highest things you have is integrity."

Cummings is a freelance writer in North Andover, Mass. She can be reached at jocummings@attbi.com.

"If the boss were to tell me to do something immoral, I couldn't do it. One of the highest things you have is your integrity."

Dennis Peasley
Information security officer for furniture company Herman Miller

six ways to stay ethical

You might be confident in your personal ethics, but what about those of your department or company? Here are some tips for keeping your shop ethical.

1. Consider the front-page rule. Before making a decision, decide how the company would feel if it were splattered across the front page of a national newspaper. "If you're making a decision you don't want anyone to know about, then it's a bad decision and you shouldn't do it," says Dieter Marlovics, CIO at Gelber Group, a Chicago brokerage. "Even if you think it will help the business at the time, if it's not ethical and it becomes known, the business will suffer far more."

2. Formulate ethical, yet practical, policies. If your policies aren't practical, no one will follow them, and attempts to make your shop ethical will fail, users say.

Dennis Peasley, information security officer at Herman Miller, a furniture company in Zeeland, Mich., cites this example: "In Michigan, it's illegal to put men's and women's underwear on the same clothesline. But no one arrests you for doing that. That's a rule that doesn't make sense, and so it's not enforced. In networking and in your company, you need to set practical rules you can enforce."

3. Educate users. Formulating ethical policies is difficult unless you fully understand the issues. That's where IT comes in, users and experts say.

"My role is to explain the consequences, since the people making the decision aren't usually technically savvy," says Erik Towt, network analyst at the Denver Broncos football organization. "You don't want to go around like Barney Fife and police everything, but you need to explain the issues clearly. Technology changes daily, and you have to keep up with it in order to stay ethical."

4. Make ethics part of the hiring process. When hiring, most IT shops check references, but primarily to verify technical skills. Few companies hire with an eye toward ethics, says Winn Schwartau, an expert on computer ethics and president of The Security Awareness Company. "But ethics should be part of the hiring process. If I'm giving people the keys to the kingdom to run pieces of my shop, I better be sure they're ethical," he says.

5. Ensure staff members know what to do when faced with an ethical dilemma. Staffers need to know what the rules are and the steps to take to enforce them. Wells Dairy suffered when a network employee went against company policy and installed pornography on his computer, says Tom Rohde, director of technical services for the dairy. "Other people within the department found out about it and were talking amongst themselves, but no one informed me," he says. "Eventually, I found out about it and the person was fired, but not before the staff lost a lot of time and energy gossiping about it."

After that, Rohde says he met with staff members individually to underscore the need to first approach the offender and next escalate the problem to him.

6. Enforce ethical standards strictly and evenly. "You need to be consistent in the policy, the enforcement and everything you do," Towt says. "That's the easiest way to ensure you're running an ethical shop. Even if [you've got to challenge] a friend, you have to be consistent."

— Joanne Cummings

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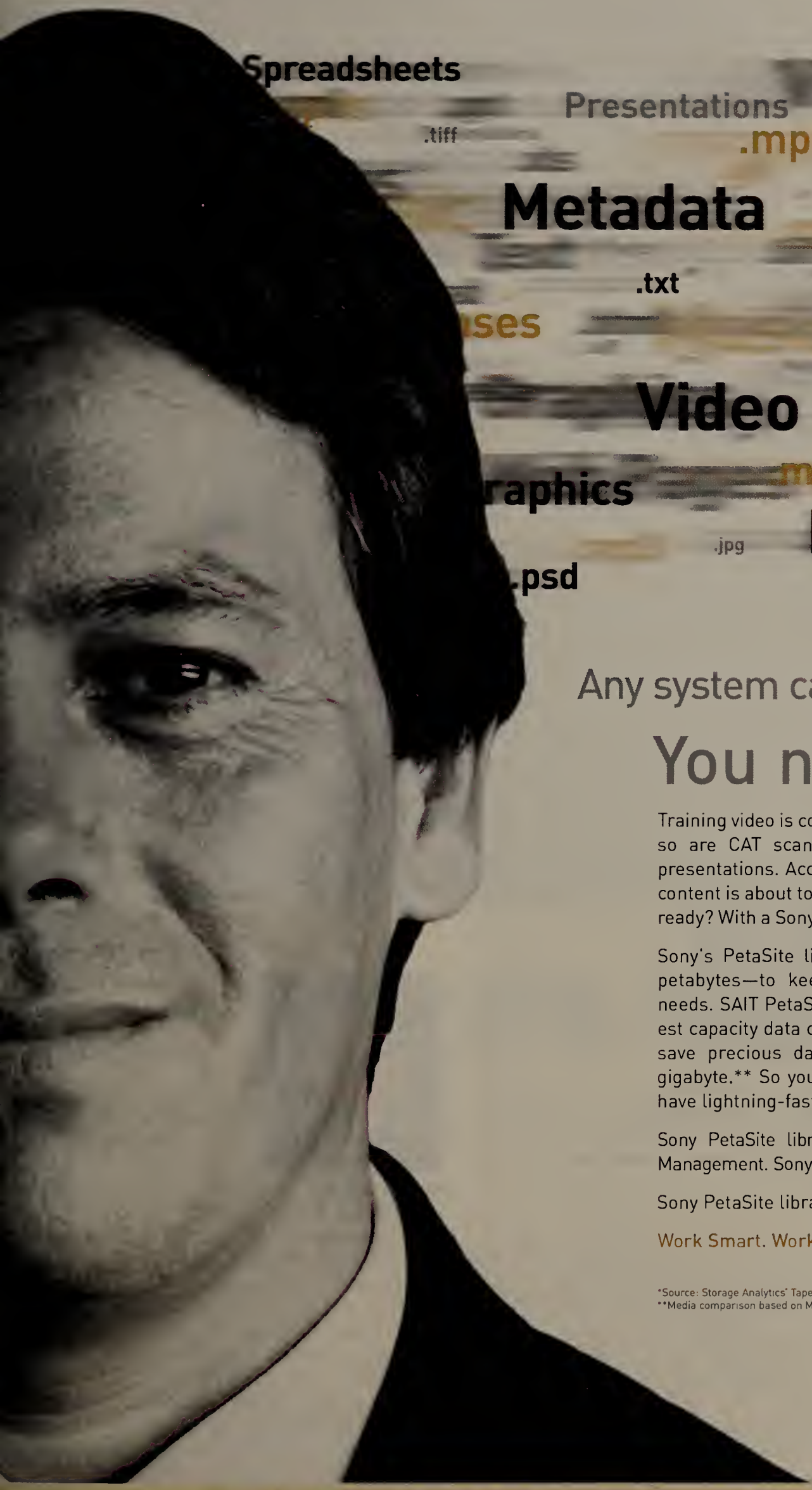

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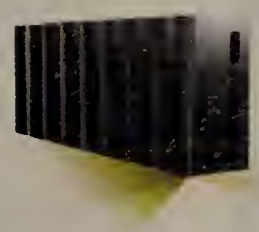

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JASON GROW

Greg Folsom, vice president of IT at Arnold Worldwide, a Boston ad agency, is happy with his job and pay — especially in light of today's business climate. **"While it is always good to be challenged, job security is No. 1 for me."**

Come payday, it's good to be you

Although a softened job market has many network professionals willing to trade money for job security, salaries continue to rise and bonuses are back.

BY JULIE BORT

With 2003 salaries for network executives averaging $113,140 nationwide — and increases for all network titles outpacing the rate of inflation — the network profession remains an excellent career choice. That is just one of the findings from the 2003 Network World Salary Survey, in which we questioned 1,542 IT professionals with the help of research firm King Brown & Partners.

Network executives' salaries rose 3.5% in 2003, from 2002's $109,280. Network professionals with management-level titles (such as LAN manager, WAN manager, director of) and those with staff titles (network designer, operations) experienced 4% increases in salaries over 2002. This wallops the 2002 inflation rate of 1.59% and the 2.7% rate recorded for January through May 2003 by InflationData.com. (See "Your salary" chart, page 64.)

Specifically, LAN/WAN manager-level workers will earn base salaries of $71,670 this year, while those with staff-related titles pull in $63,230. Salary increases for network professionals also compare well to the 3.8% average rise in compensation experienced from the first quarter of 2002 to the same quarter in 2003 for all jobs across the private sector, according to the U.S. Department of Labor's Bureau of Labor Statistics.

2003 salary calculator

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Perhaps the biggest grin-inspiring surprise of the survey is bonuses. Network executives — those with IT titles such as senior vice president and vice president — expect a healthy $15,070 in bonus money for 2003, a 27.4% increase over 2002. This will even trump the bonuses earned by CIOs, who expect $12,190 for 2003, a 1.6% rise. Across all job titles, network professionals' anticipated 2003 bonuses will increase 3.3%, with those holding e-commerce-related titles looking out for an inspiring 30.9% increase to $3,090 in 2003.

When combining base salary, bonuses, stock options and other payments, total compensation for network executives in 2003 will reach $133,480, a 3.4% increase over 2002's $129,100. Across the board, the mean total compensation for network professionals increased 3.7% to $73,910 for 2003, compared with $71,300 in 2002.

When it comes to payday, it's good to be you.

Job security No. 1

Yet underneath raises and hefty bonuses runs a current of fear. While IT jobs aren't particularly targeted for elimination from companies in embattled industries, they aren't immune either. Alternatively, struggling companies sometimes freeze salaries and eliminate bonuses in hopes of avoiding layoffs — not always with success. The result is, for all but the highest-paid network professionals, job security has become the No. 1 factor of job satisfaction — up from a rank of No. 3 in 2002 and from its nearly non-issue status two years ago.

Survey respondents say they are less worried about long-term unemployment than they are about being forced via a layoff into a less suitable, lower-income job. This is a marked difference from the job-hopping-for-salary-increases attitude that characterized IT professionals a couple of years ago.

"The people who have remained employed for the past six to 10 years — they're still making the same amount of money. But the people who have been unfortunate enough to be laid off, they need to take whatever job is out there, which generally is not the ideal job for them — not fully utilizing their skill sets," says Greg Folsom, vice president of IT at Arnold Worldwide, an advertising agency in Boston. He has watched others struggle in a layoff quagmire, such as two co-workers at his former job who took big pay cuts to become employed again.

Although the survey shows that Folsom and others of his rank are most likely to say "challenge of work" is the most important factor for job satisfaction, this father of three rates job security highest. "While it's always good to be challenged, job security is No. 1 for me. I'm probably typical of an IT director — I'm close to 40 [at 39]. I'm the breadwinner," he says.

Other network professionals say job security comes down to skills. Today's weaker job market is a form of housecleaning, says Denise Dreier, senior network engineer for Textainer, a worldwide freight firm in San Francisco.

"In the Bay Area, there are a lot of unemployed tech workers, but there were a lot of people who worked in dot-coms that shouldn't have been working in that field — who had no qualifications and no real skills," Dreier says, adding that she remains confident she could find another job if the need arose. "For the engineering and systems administration side, the demand is still there, is always going to be there. Companies need people to run their networks."

Certainly the yearning for job security has led to staff stability and reasonable pay requests. "We haven't had turnover here in probably two years — zero turnover in the

See Salary, page 66

One surprise condition linked to higher pay is tenure in an industry. . . . As responsibility, salary and position rise, so does attachment to one's industry.

your salary

Grouping	Description	2003 base salary	2002 base salary	% change	2003 bonus	% change from 2002 bonus	2003 total compensation*	% change from 2002 total compensation
All respondents	**Mean average**	**$69,510**	**$66,890**	**3.9%**	**$3,150**	**3.3%**	**$73,910**	**3.7%**
Corporate officer	**Mean average**	**$111,040**	**$107,610**	**3.2%**	**$13,570**	**15.1%**	**$128,190**	**3.0%**
	CIO	$119,160	$115,720	3.0%	$12,190	1.6%	$133,780	2.2%
	Sr. VP/VP MIS/IT/IS/DP	$113,140	$109,280	3.5%	$15,070	27.4%	$133,480	3.4%
	General corp. mgmt.	$81,910	$79,640	2.9%	$13,640	23.0%	$98,000	4.7%
Manager or director	**Mean average**	**$71,670**	**$68,910**	**4.0%**	**$3,460**	**3.0%**	**$76,580**	**3.8%**
	MIS/IT/IS/DP	$72,950	$70,010	4.2%	$3,450	-1.4%	$77,780	4.2%
	LAN, WAN, network	$66,080	$63,690	3.8%	$2,830	1.1%	$69,910	3.1%
	Telecom	$86,630	$83,000	4.4%	$8,050	4.0%	$103,680	4.3%
	Internet, intranet, e-commerce	$59,000	$57,180	3.2%	$3,090	30.9%	$62,090	4.1%
	Other mgmt.	$73,180	$70,790	3.4%	$3,630	25.2%	$78,010	3.0%
Staff	**Mean average**	**$63,230**	**$60,820**	**4.0%**	**$1,810**	**-2.7%**	**$65,850**	**3.6%**
	Network architect, designer, analyst, database admin.	$72,040	$69,170	4.1%	$2,660	-11.0%	$75,720	3.4%
	Network operator, technician, other network operations staff	$53,450	$51,130	4.5%	$1,000	2.0%	$54,960	4.2%
	Trainer, help desk, tech support	$51,870	$50,020	3.7%	$700	-7.9%	$53,100	3.2%
	Software or Web programmer/developer	$63,060	$60,700	3.9%	$960	2.1%	$64,300	3.6%
	Other staff	$64,830	$62,970	3.0%	$2,120	27.7%	$68,200	3.6%

*Includes stock options, bonuses and other payments

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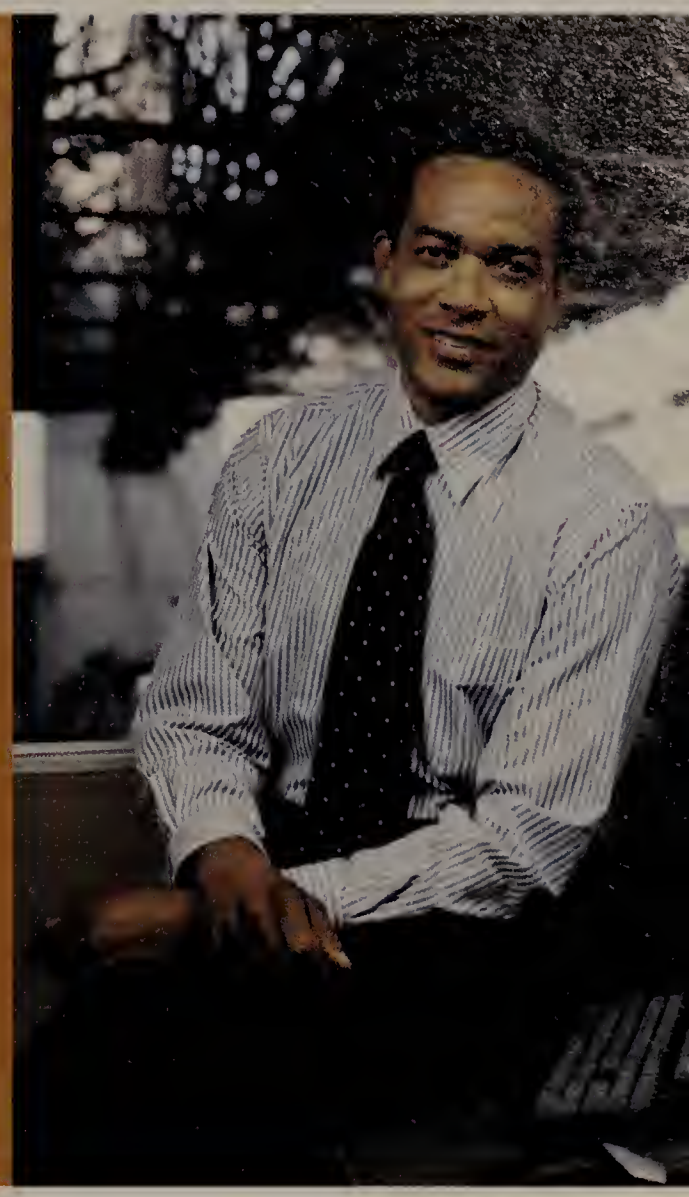

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Salary
Continued from page 66

IT department," Folsom says. "I don't hear, 'We should be making more money because we have a certificate in this or that!' anymore. People are content to be gainfully employed."

Network professionals do have other desires besides confirmation of next week's paycheck. Rounding out the top 5 overall factors for job satisfaction across all titles, benefits package lands at No. 2; challenge of work, No. 3; overall compensation, No. 4; advancement potential, No. 5. When looking at job satisfaction factors by title and income, the survey finds that those with higher incomes are looking for more recognition, challenges and autonomy while those who have lower salaries are more focused on professional development and training, and annual raises.

Influences on great pay

Throughout the years, including 2003, the salary survey has consistently shown that several criteria significantly influence high pay (see "What affects your pay," right). While individual situations vary, statistically speaking as the following factors increase so does pay: responsibility, hours worked, age, size of employer and tenure. Some influences are fairly straightforward: work more hours, make more money. Others are subtle. Pay increases with responsibility, for instance. Higher-paid workers have more network servers within their scope, more clients tied to the servers and more people reporting to them. However, they also work the longest hours.

Still, after the burnout years, many IT workers happily sacrifice pay for quality of life. Mark (last name withheld upon request), a senior network systems engineer for a financial services firm in Kansas City, Mo., did so about a year ago when he moved from consultant for a company to regular full-time status at it. That change reduced his hourly pay rate from $60 to about $35, but this 38-year-old father of a toddler says the trade-off has been worth it. "I've been in IT for a long time, and I've had jobs where I worked 80 hours a week for weeks on end, and that was normal. I've gotten to a point in my life where I want a pretty steady 40 hours a week. I'll go outside that when the need is there, but I want balance. I'll definitely give up money for that," he says.

Mark earns $72,000 and is expecting a bonus of about $10,000 (15% of his salary) for 2003. Bonuses can run as high as 20% of salary in his department. As he lives in an area where the cost of living is lower, yet is earning pay on par with the national average for his job description, he says he's happy with his new salary.

Like responsibility, the relationship between company size and high pay is not direct. Employees of larger companies tend to make more. However, they are also more likely to be older — 35-plus — and have more years logged with the current employer, our survey finds. Two other factors are linked statistically to pay rates: location (see "Regional pay scales," at left) and gender (for related story, go to www.nwfusion.com, DocFinder 6822).

See Salary, page 69

what affects your pay

Factors such as hours worked, size of company and education level most heavily influence your paycheck.

Work more, get paid more

Hours worked per week	2003 base salary
<45	$63,880
45-54	$73,220
55+	$84,750

Employees of larger companies earn more

But they also tend to be older and have more tenure.

No. of employees	2003 base salary
<100	$64,040
100-999	$66,760
1,000-9,999	$76,030
10,000+	$85,120

Income rises with education

But not necessarily through certificates.

Education	2003 base salary
High school	$65,070
Associate's degree	$63,410
Bachelor's degree	$74,480
Graduate school	$89,840
No certificates	$71,130
One certificate	$65,340
Two+ certificates	$70,330

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North Midwest	$65,720	$63,470	3.5%
South Midwest	$67,000	$63,540	5.4%
Northwest	$65,440	$63,250	3.5%
West	$64,920	$61,980	4.7%
South	$64,190	$61,910	3.7%

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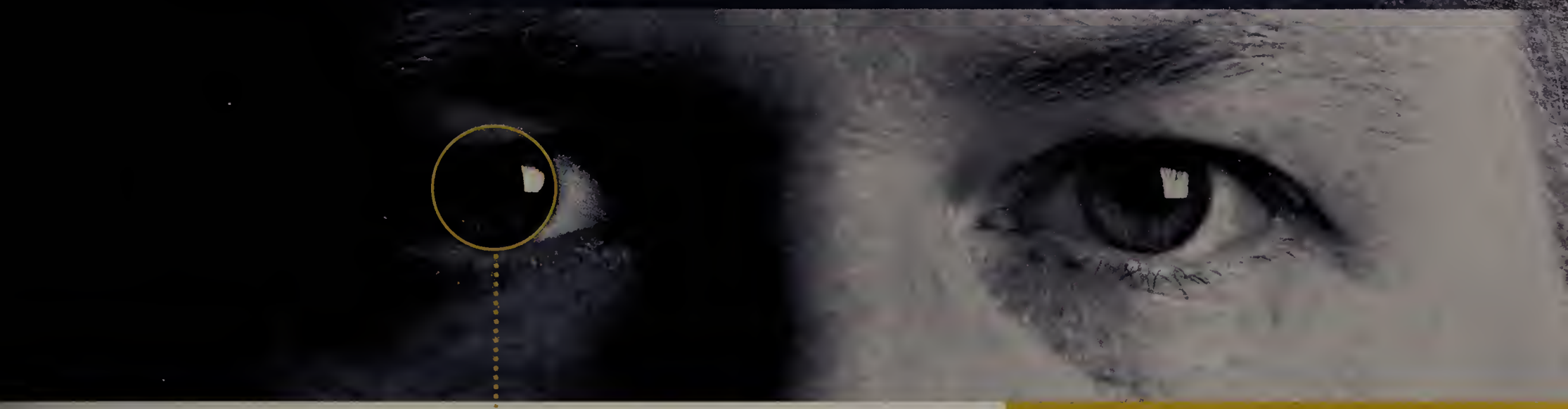

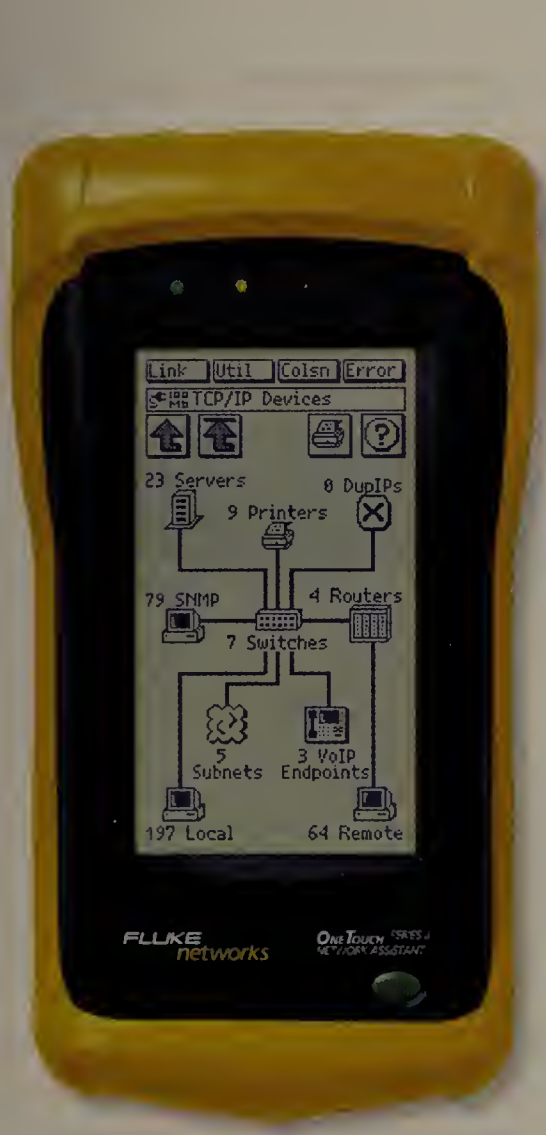

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Salary
Continued from page 66

Loyalty and longevity

One surprise condition linked to higher pay is tenure in an industry. Many network professionals pride themselves on being employable by any vertical industry — and view their industry-independence as a way to keep future job opportunities as wide as possible. But as responsibility, salary and position rise, so does attachment to one's industry, the survey found (see "Your loyalty," right).

"I always used to think I could go work at a shoe factory and my job would be exactly the same," Folsom says. But he's learned that IT is irremovably intertwined with vertical industry. "If the network is up, the servers are up, the connection to the Internet is good and e-mail flows — that's all well and good, but that's the baseline stuff," he explains.

True success, he continues, comes when workers react with the "wow factor," as in: "Wow, the IT guys came up with that new way to do this, and it's really helping us." That makes intricate knowledge of the advertising industry's many specialized IT needs, such as media-buying tools and graphics-file delivery systems, a must.

"I need to realize why things are set up in a certain way and to think about tools I could deploy for the creatives — the people that bring in the money — to be more productive ... before they ask," Folsom says. "I was so wrong when I used to say I could go work in a shoe factory."

Not surprisingly, then, the survey shows that as income increases so does loyalty — but only to a point.

Those making less than $40,000 are more likely to be "seekers" (people actively looking for another job). Those in the $40,000-to-$60,000 range are more likely to be "explorers" (those not actively looking but who would pursue interesting opportunities if they stumbled upon them). Those earning more than $80,000 are more likely to be "approachables" (those who would apply for another job if specifically asked) or "loyalists" (not interested in other jobs at the moment). In addition, seekers are more likely to be men, have higher levels of education, work over 54 hours a week and have less than 10 years of tenure at their current company. Loyalists are most likely to be older than 44 years old and with their current companies 10 or more years.

So network professionals are behaving more loyally than they were two years ago — no more job-hopping (no more signing bonuses either, for that matter) — but still are keeping their ears to the ground. Back in the job-hopping days, Mark says, "IT people were very pompous about their ability to go, 'I don't like this job this week. I think I'll go down the road, make 20% more and do something else for a few months.' Two years ago, I went through four different companies. Part of it was security and part of it was trying to find the right mix. But now I am more than willing to take a huge pay cut in order to have some stability."

Network professionals are behaving more loyally than they were two years ago – no more job-hopping (no more signing bonuses either, for that matter) – but still are keeping their ears to the ground.

Book-learning bonus

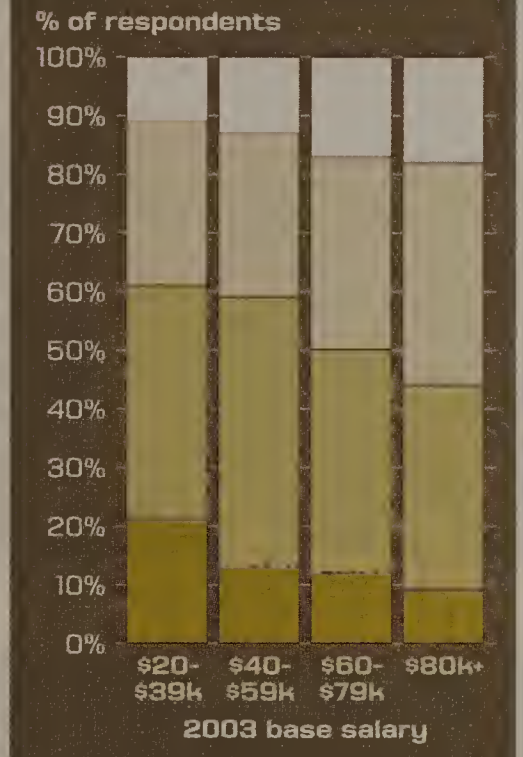
This year's salary survey shows that nothing substitutes for a four-year degree for those who want the highest-paid executive jobs. The mean 2003 salary across job titles for those who have completed graduate-level schooling is $89,840. It is $70,330 for those with two or more certifications.

Folsom, the statistical exception of an upper-level network executive with a two-year associate's degree and a handful of certifications, still desires more formal education. "I always think about going back," he says of college. "Rather than going to more IT-related classes, I need more business-related classes, more writing classes. There are people who work for me that only have a two-year degree or dropped out of school because they were bored, and I'm sure that someday they are going be saying what I'm saying right now — 'I wish I went for the four years because it just makes you a more well-rounded person.'"

The upshot is, network professionals are seeking balance more than ever. They want challenge balanced with job stability, pay with quality of life, and real-world know-how with book learning. ■

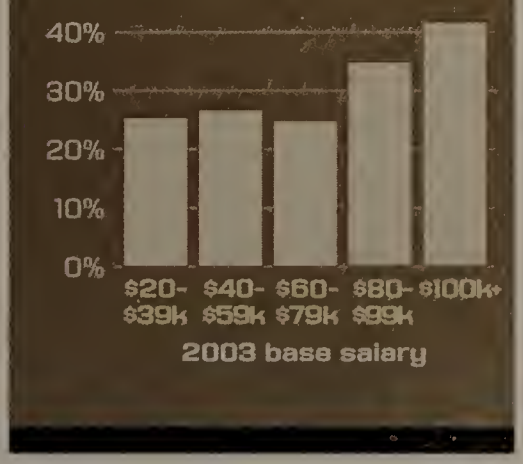
your loyalty

The higher the wage, the less interested in other jobs an employee becomes.



- **Loyalists:** Cannot envision changing jobs in the foreseeable future.
- **Approachables:** Not actively seeking, but would follow up on an interesting opportunity if approached and asked to apply for it.
- **Explorers:** Not actively seeking, but would pursue an interesting opportunity they read or heard about.
- **Seekers:** Actively seeking a new position.

Staying in a specific vertical industry grows in importance as pay increases.



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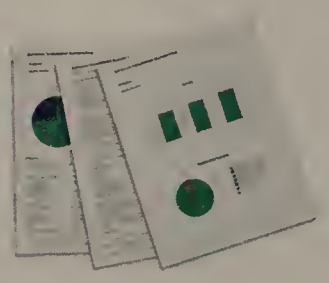

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Gandalf the Grey rides shotgun while Lance Groth, IT director at the Minnesota Office of the Legislative Auditor, plays "shooter" games. "Now if I could just get him to warn me about bad guys hiding in ambush!"

The (online) games you play

Need to unwind? Load up that 'shooter' software and away you go.

BY DENISE DUBIE

By day, you manage a budget of millions, oversee a staff of dozens and make decisions affecting every employee. By night, you engage in mighty battles using powerful weapons and maybe even some black magic. You are an online gamer.

You might be a lot like Lance Groth, director of IT services at the Minnesota Office of the Legislative Auditor in St. Paul. A network manager by day, Groth considers himself a gamer at heart. "I've been playing PC games for about 10 to 12 years," says Groth, who at 44 doesn't meet the 20-something demographic of most online gamers.

Groth mostly plays "shooter" games, such as UT, Battlefield; 1942, Medal of Honor; and Allied Assault, on PCs rather than consoles. PC gamers access either free or pay-as-you-go online games, while console players favor software games that run on Microsoft's Xbox, Nintendo's GameCube or Sony's PlayStation. Groth says his passion for logging on and playing first-person games even led him to get broadband access.

He is not alone in his love of online games. The Interactive Digital Software Association (IDSA) reports 60% of all Americans older than age 6, or about 145 million people, play computer and video games. Game software sales grew 8% in 2002 to $6.9 billion, with more than 221 million computer and video games sold — roughly equaling two games for every household in America.

IDSA says online gamers are an intelligent bunch looking for an outlet for their active brains. The organization reports that almost 40% of online game players have household incomes of $60,000 or more. And 88% of online gamers have at least some college education; 17% have post-graduate degrees.

Many turn to online games to chill out. Brian Jones, manager of network engineering and operations at Virginia Polytechnic Institute and State University in Blacksburg, says online hunting and fishing games help him relax when weather or time don't permit the real thing. Games such as Cabella's Big Game Hunter require skill, intelligence and strategy, he says. "These games are not just 'shoot 'em up, kill everything in sight to get the prize type' games," he says. "They are designed to be very much like real hunting experiences."

Jones enjoys the strategy required to go hunting in a virtual world and says it has improved his offline hunting skills. "These games take you away from the hectic everyday routines and let you focus your mind on other things," he says.

A computer systems architect for a large aerospace company in Maine who wishes to remain anonymous agrees. "Playing a good game for me is a little like a mini-vacation. When I need to escape for a few hours and going outdoors is not an option, a PC game is often my first choice. I like games that immerse me and require my full attention but do not frustrate me with difficulty and complexity," he says.

Tom Sandford, a network administrator for the Regional Information Center in the Jefferson-Lewis area of New York, uses games such as Ghost Recon, Rainbow 6, Doom and Wolfenstein to unwind after-hours. "I'm a network administrator who loves to come home and game all night when time allows it," he says.

Sandford touches on one risk of online gaming: addiction. Gamers acknowledge how easy getting pulled into the netherworld of online games is. Game Research found more than 50% of online gamers spent up to 12 hours per session on online games. "It is not unusual for an evening of game playing to extend well into the night or to discover that an entire rainy weekend day has been spent playing," says the gamer from Maine.

Cost can be a downside, too, notes Scott Maddox, a network manager at iContact Australia in Canberra, Australia, who owns a few PCs as well as an Xbox, GameCube, PlayStation 2, Nintendo 64 and various other old consoles and computers.

"The costs of all this plus games, suffice it to say, was quite large," he says. "But even considering the downside, I don't think I would stop. I love playing games." ■

JOHN NOLINE

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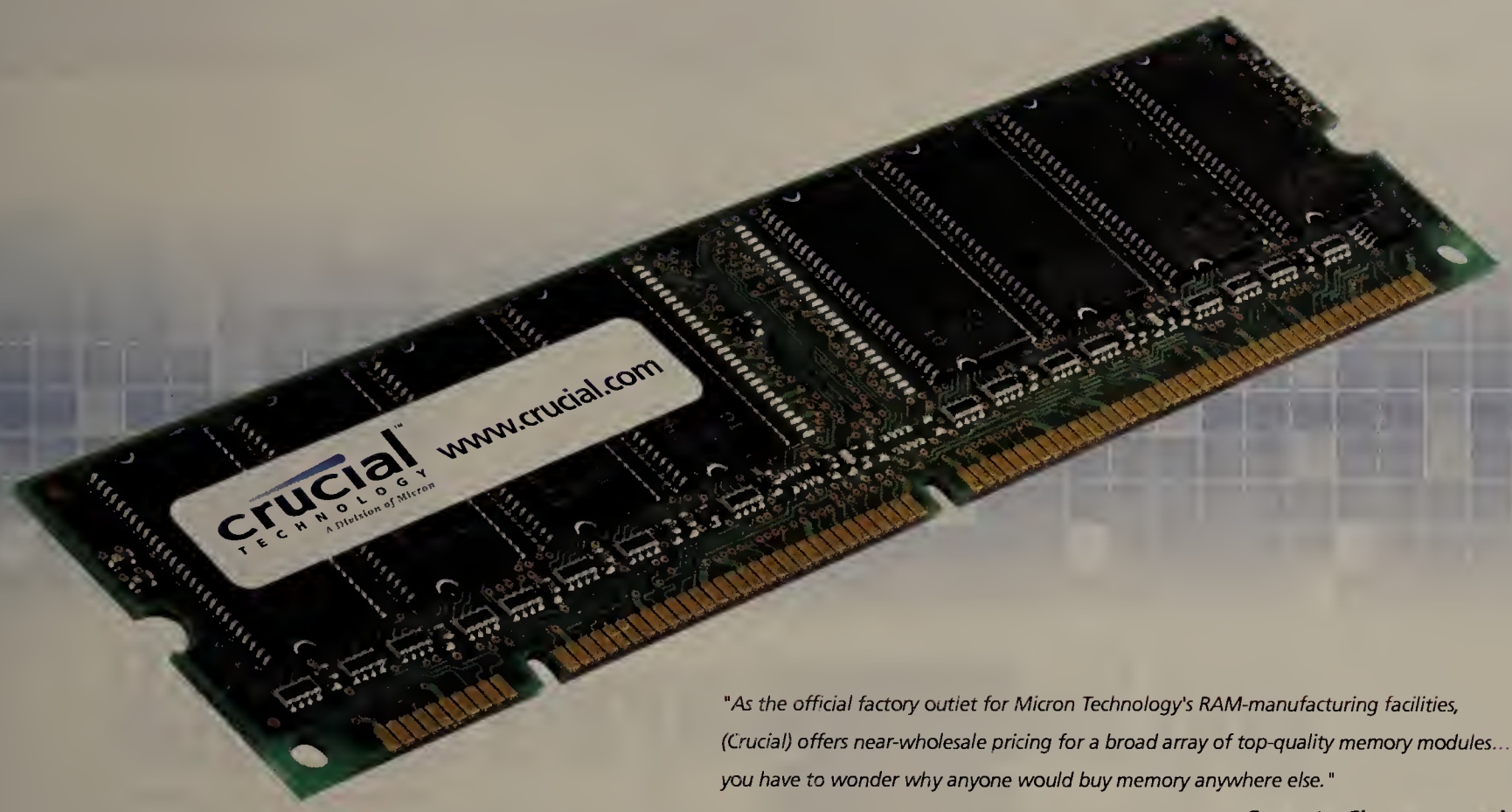

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Sign-Off

ARTHUR GIRON

You, the corporate bad guy

From clamping down on improper Web use to flushing out file-swappers, you're often cast as the company enforcer. Here's how some of you deal with the image problem.

BY PAUL MCNAMARA

Being an enforcer — like it or not — comes with the territory for network professionals.

However, that territory keeps expanding as spam and sexual harassment liability make e-mail and Web-use monitoring commonplace; rogue wireless access points keep an IT posse running building to building; unauthorized software causes unnecessary support headaches; and the government cranks out privacy regulations faster than $20 bills.

Laying down the law might be part of the job, but diligence can win you a chilly reception in the lunchroom.

Yet most network executives remain perfectly willing to play Dirty Harry (or Harriet) in the interest of keeping their employer's network up, clean and law-abiding. Yet they'd like to see a little more support from the top brass than Clint Eastwood's notorious character enjoyed on screen. You might say it would make their day.

"I always had to be the bad guy, and my superiors would dodge the bullet when employees complained to them directly," says Chey Cobb, who has overseen networks for U.S. intelligence agencies. "Of course, the superiors always felt they were above the rules and engaged in these improper activities themselves," adds Cobb, now a consultant and author.

Being painted as the bad guy can take a toll, Cobb says. While a network manager: "I was angry, sad and disturbed to find out that my so-called friends were talking me down. In one instance ... I was uninvited to after-work drinks," she says.

A network manager at a large manufacturing company describes the typical rank-and-file attitude: "Twice in a week, recently, I had to remove software from two PCs. Someone had installed WeatherBug and the associated spyware, and another had installed a Harry Potter screensaver. When I told the users the software had to go, they both responded, 'Like I'm the only one.'"

The network manager, who requested anonymity, says, "I thought, 'No, you're not the only one making my job harder than it has to be.'" Of course, he adds, "you can never really say what you think."

Which might explain why some enforcers relish looking for a bit of sport in the role.

"Some of it is even fun," says Michael Lester, a network professional who asked that his company not be named. "I have hunted down unlicensed software, games, .avi files, sound files, screen savers, all kinds of stuff that does not need to be on company PCs. The look on their faces when they get the 'Access denied' message after clicking on the Deer Hunter icon ... needs to be seen to be appreciated."

But such sport, which does of course cut both ways, can contribute to adversarial office relationships.

Another network manager, who also requested anonymity, describes what happened when IT implemented an automatic screensaver and computer lockout that activates after 10 minutes of inactivity. After that short period, in order to use the computer, users must hit <CRTL><ALT><DEL> and then enter their logon name and password. "Some users already have implemented background programs that send a keystroke to the [operating system] in order for the computer to appear as if in use and thereby preventing the screen saver from activating," the network manager says.

Enforcers consistently cite a lack of commitment as a primary cause of friction with the masses. "Usually, the biggest problem I have is not in imposing a certain practice, but in the attempts by the people who asked for the practice to short-circuit it when it becomes inconvenient for them," says Bob Taylor, who works in network management for a major municipality.

As for dialing down the end-user whine-o-meter, Tony Podrasky, a network specialist at HP, advises deploying the chain of command as a shield. "When we've had to block particular sites, and the users complain to us, we simply say, 'Have your boss call my boss,'" he says. "That is usually a good way to recalibrate people." ■

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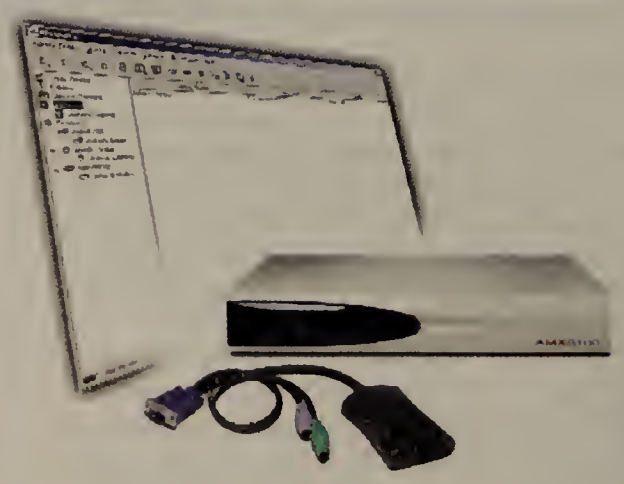

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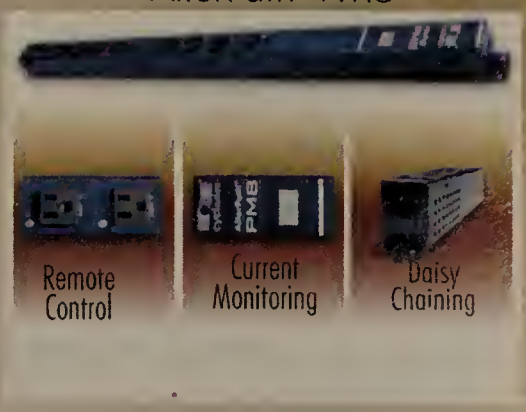

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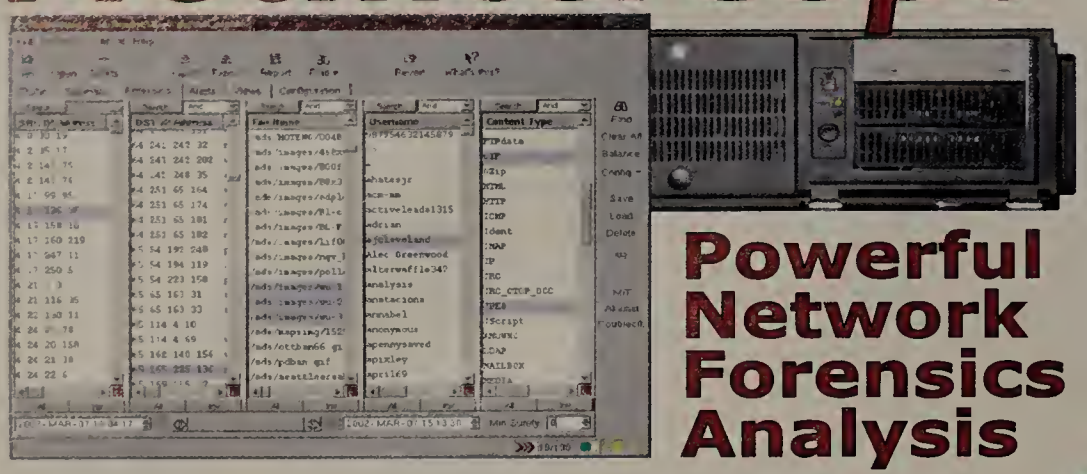

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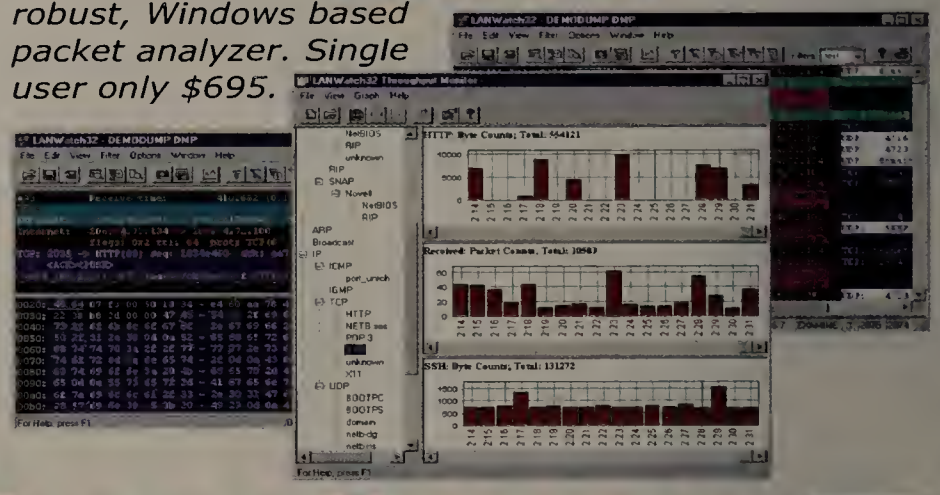

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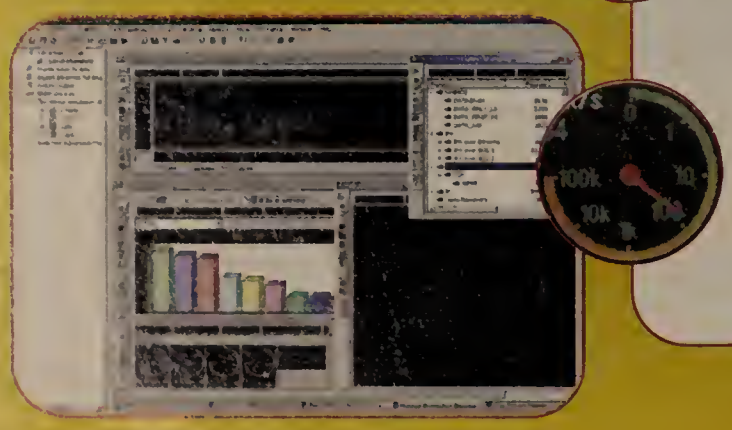

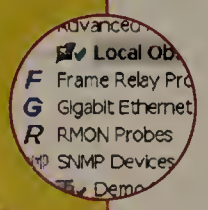

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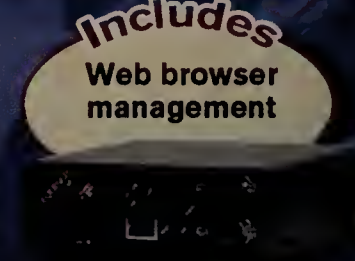

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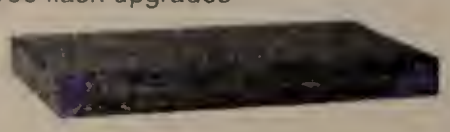

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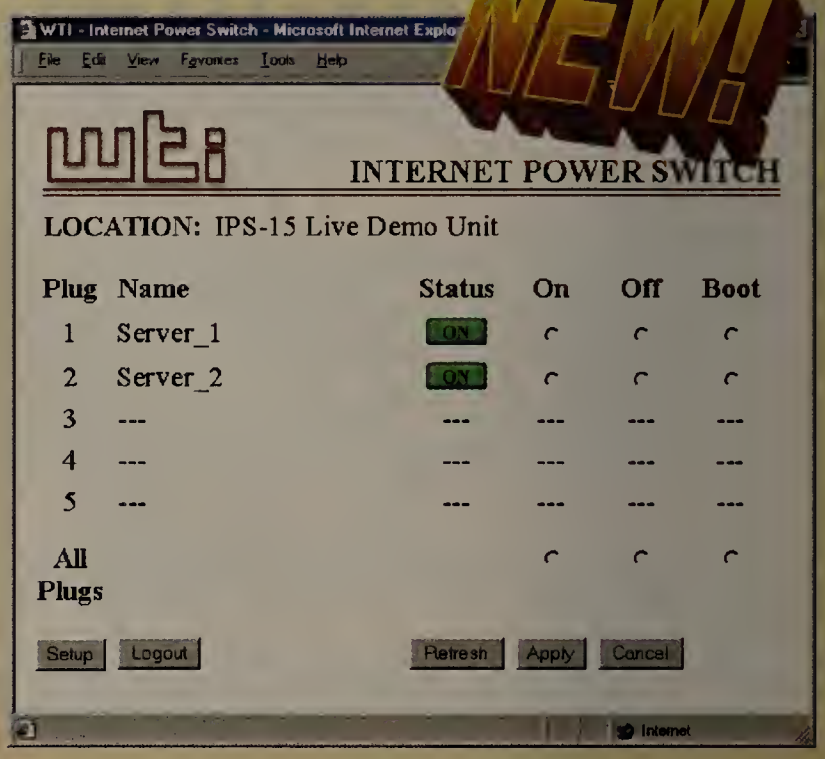

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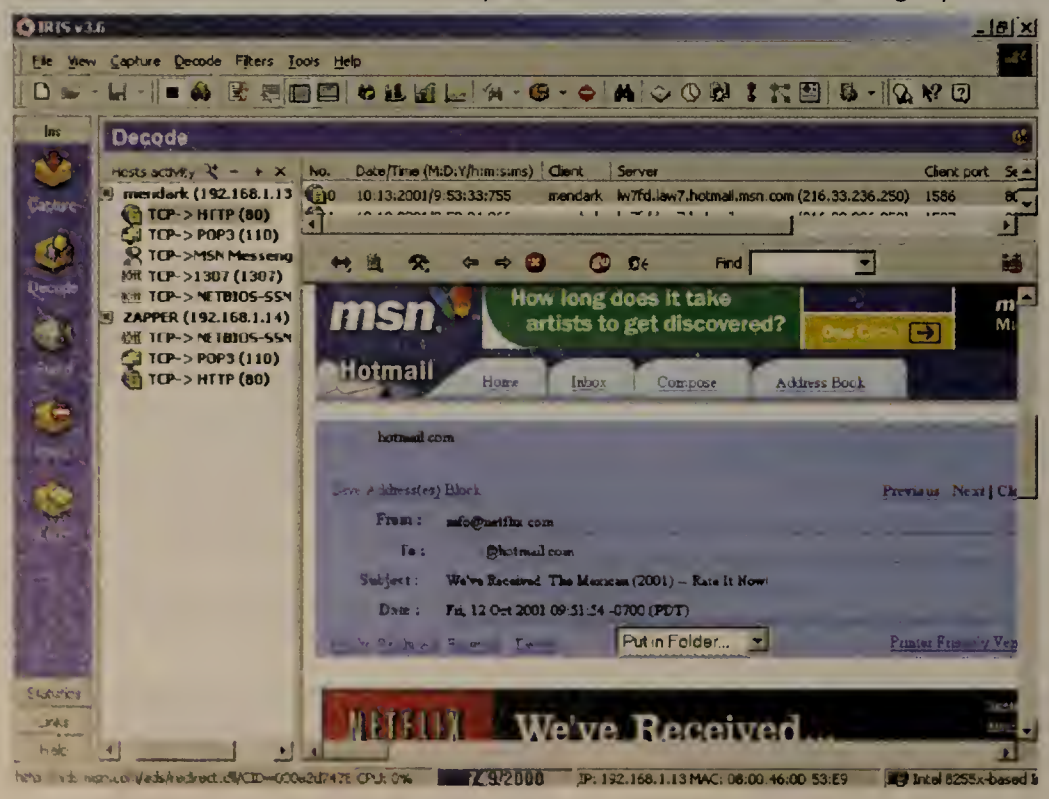

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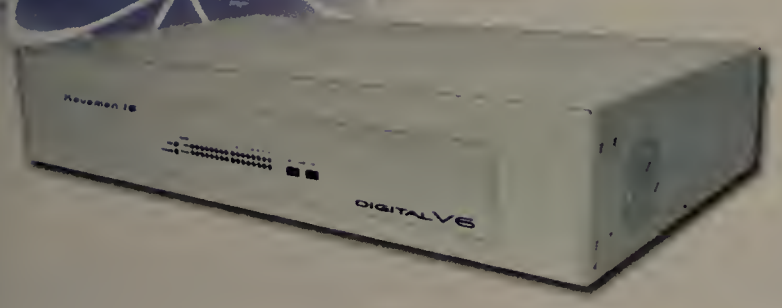

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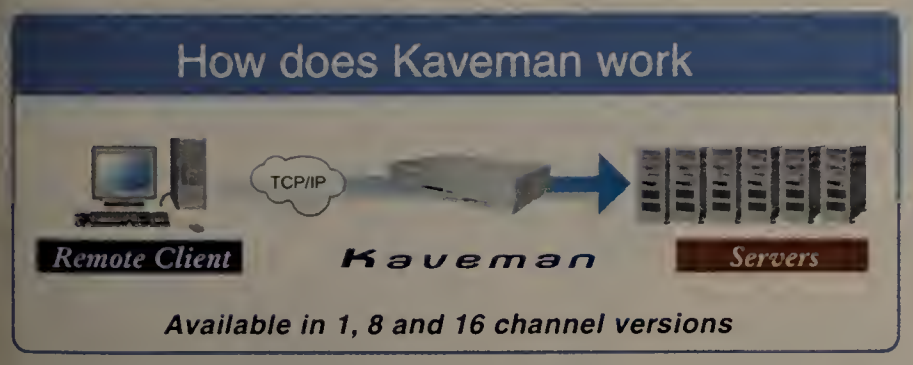

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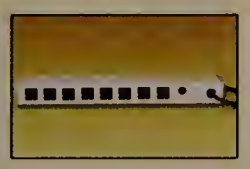

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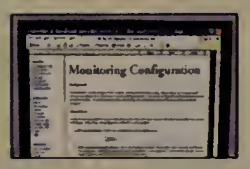

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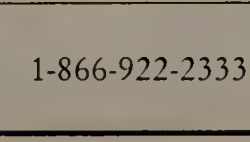

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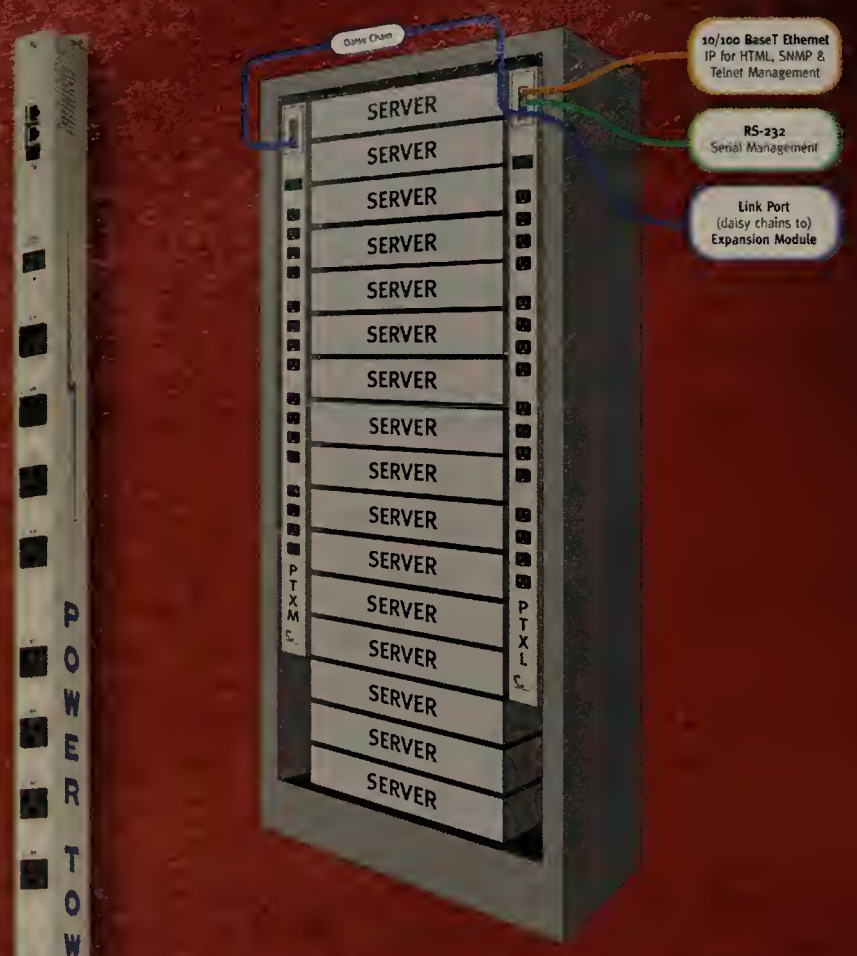

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In the past two years, as the IT profession has been batted about like a bad badminton birdie, enrollment in certification programs has dropped. However, certification programs are starting to see an upsurge, along with efforts to make the training more valuable.

Among the trends: more hands-on, facilitated labs to put knowledge to work and more curriculum that helps mid-level managers and non-IT people increase their range of skills. A third trend is that there's more blending between on-line instruction and instructor- or mentor-led instruction in the project management end of skills, bringing enrollees more value.

Roland Van Liew, president of HOTT (Hands On Technology Transfer) Inc., says enrollment for his hands-on focused training organization has doubled in the past year. "We know that certifications may help you get an interview, but they aren't going to help you get and keep a job. Only competence will do that," he says.

Originally on-line courses and certification didn't include hands-on labs. "I'd say 80% of the certification groups have changed to offer a program that shows participants how to use the program or application to solve a problem," says Van Liew. "We want you to get more than a highlight of features. Yes, we want you to know a lot about JAVA syntax, but more important is that you use it to develop a site that is usable."

Thomson NETg, in its two-year study of corporate learning, found that a blend of hands-on labs (known as scenario-based exercises) with mentor and on-line learning with appropriate unit tests, produced the best results. The report, Thomson's Job Impact Study: The Next Generation of Corporate Learning, states that blended learning with the hands-on, facilitated labs improves accuracy by 30% and speed of skill acquisition by 41%.

Van Liew says that certifications supporting open systems are among the most popular. "JAVA is burning hot right now," Van Liew says, as is PHP. Other hot certifications are ASP, CGI, MCSC, MCSD and MCSE. There's been a major increase in security certification offerings, including a major uptick for the SANS (System Administrators, Audit, Network, Security) Institute, which now has 156,000 government and commercial participants. Security, however, remains a small portion of the overall IT population looking for training.

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IT CERTIFICATE PROGRAMS

IS PROJECT MANAGEMENT PROGRAM

A 10-week comprehensive program covering current best practices in information systems project management. Topics: system development methodologies; CASE tools; project management software; organizing and staffing the project team; conflict resolution techniques; negotiation skills; management functions and tools; planning, integrating and executing plans; network scheduling techniques; forecasting and estimation; project control; risk management; quality management; user training; test plans; unit, integration and system testing; project post-mortem; maintenance; version control; contracts and procurement; evaluation tools.

IP TELEPHONY PROGRAM

A 12-week integrated program focusing on designing and implementing fully converged IP telephony networks. Topics: telecommunications technology; network fundamentals; systems and network design and implementation; convergence of telecommunications technologies; voice over IP concepts and design; voice/data integration; advanced networks: ATM, DSL, DWDM, frame relay, and gigabit Ethernet; wireless and satellite communications; telecommunications management.

LOCAL AREA NETWORKS PROGRAM

A 12-week intensive program in the fundamentals of local area networks, wide area networks, and data communications. The program covers a wide variety of network configuration and management tasks ranging from the hardware level up through the administration of Novell, Windows 2003, and UNIX services. Lectures are complemented by hands-on work in a state-of-the-art laboratory that emphasizes common administrative tasks including web servers, firewalls, network security, and enterprise router configuration.

NETWORK SECURITY PROGRAM

An 11-week intensive program in the fundamentals of network security, hosts security, and Information Assurance. The program covers a wide variety of security technologies using configuration and management tasks ranging from the setup of secured servers, firewalls and Virtual Private Networks (VPNs) through the development of comprehensive enterprise security architecture, security policies and security auditing methods. Lectures are complemented by hands-on work in a state-of-the-art laboratory that emphasizes essential network security tasks using Cisco, Checkpoint, Microsoft, ISS, RSA, Linux and Open-Source products and tools.

STANDARDS-BASED WEB DESIGN PROGRAM

A 7-week comprehensive program covering current best practices in web design based on new mark-up, presentation, and accessibility standards. Topics: XHTML; CSS; DHTML; separating content from presentation; table-free layouts; designing for legacy browsers; Document Type Declaration; validation; converting existing documents.

DATABASE TECHNOLOGIES PROGRAM

A 12-week comprehensive program covering database applications development and administration using Oracle. Topics: RDBMS fundamentals; E/R modeling; database design and normalization; SQL; PL/SQL; triggers and stored procedures; Oracle architecture; database administration; networking; backup and recovery; Oracle utilities; Oracle performance tuning and optimization; replication.

J2EE DEVELOPER PROGRAM

A 10-week in-depth program covering enterprise-wide applications development using J2EE for programmers. Topics: J2EE architecture; JDBC; EJBs: entity, session, and message-driven beans; EJB containers; network programming; JNDI; RMI; JMS; servlets and JSP; tag libraries; XML; SAX, DOM, and JDOM; SOAP and Web services; application servers; deployment; life cycle maintenance; transactions; security; interfacing with legacy applications.

JAVA DEVELOPER PROGRAM

A 10-week comprehensive program covering object-oriented applications development using Java for programmers. Topics: Java basics; object-oriented programming; standard Java class libraries; JDBC; network programming; distributed systems; AWT and JFC/Swing; Java beans; applets and servlets; Java Virtual Machine (JVM); security; multi-threaded programming; RMI; JMS; XML.

.NET DEVELOPER PROGRAM

A 10-week comprehensive program covering .NET technologies for programmers. Topics: .NET framework; Common Language Runtime (CLR); Common Language Specification (CLS); Common Type System (CTS); memory management; framework libraries; assemblies; VS.NET; VB.NET language; components; C# language; structured exception handling; ADO.NET; COM/COM+ interoperability; .NET remoting; XML support; WinForms; versioning and Global Assemhly Cache (GAC); threading models; ASP.NET; Web Forms; SOAP; Web services; .NET security.

WEB DEVELOPER PROGRAM

A 10-week in-depth program covering the technologies and techniques of Web development for programmers. Topics: HTML, CSS and XML; C# and .NET environment; ASP.NET; HTTP; Web servers; CGI programming in Perl; JavaScript; Web services; Java Server Pages; securing Web applications.

For more information by phone: (312) 362-6282
by fax back: (312) 362-6377
by Internet: http://ipd.cti.depaul.edu/itc

DEPAUL UNIVERSITY

SCHOOL OF COMPUTER SCIENCE, TELECOMMUNICATIONS, AND INFORMATION SYSTEMS
Institute for Professional Development 243 S. Wabash Ave., #301 Chicago, IL 60604-2302

IT Professionals

Consultant

Design applications using VB. NET application architectures and SQL Server databases as well as document requirements using Rational Requisite Pro. Capture system requirement using Case Modeling. Write complex pieces of VB code and other codes. Create and implement the security architecture of systems using encrypted cookies. Create websites and database instances utilizing n-tier (client-server and web-based applications). Responsible for the design, construction, maintenance and scheduling of forms and reports in system environment utilizing Crystal Reports for projects. Create mockups of reports to facilitate Joint Application Development Sessions/discussions and suggest changes to the layout for enhancement of usage. Manage development process and validate accuracy of all design specification. Assist developers with business logic and requirements pertaining to the forms and reports and in mapping data elements on the form or report to the system data model ensuring that all coding standards are followed. Act as a liaison between the test team and the development team and participate in checking all forms and reports, reporting related bugs and incidents, classifying the bugs and incidents as change requests (enhancements) or real incidents.

WAGE: $68,000/year

REQUIREMENTS:
Bachelor's degree in Computer Science, Engineering (any type), Math, Business Administration or Information Systems + 2 years exp. in the job offered or 2 years exp. as a Consultant, Systems Analyst or Software Engineer. At least 1 year of related expenence must include Visual Basic, SQL Server Databases, Crystal Reports, N-tier Applications (client-server and web based), Rational Requisitie Pro and Case Modeling

Please send your resume, referencing Job Order Number WEB 339264 to the: PA Career Link/Job Service, Site Administrator, Greene County Team PA CareerLink 4 West High Street Waynesburg, PA 15370-1324.

Consultant Software Engineer will architect, design, and develop complex web-based and client/server applications to support quantitative measurement of Company's equity trading operations. Will build multi-layered applications to compute trade performance data for use by quantitative analysts, traders, and fund managers. Will design and develop applications to support statistical, time series and other quantitative analysis of trading and market data, generated in equity exchanges worldwide. Will work with analysts, traders, and vendors to determine the reliability of third party software products and serve as key advisor on project risk assessment. Will develop tools that help analysts study historical and current trends in the equity trading market Will act as a technical resource across functional organizations. Will extensively use various combinations of the following technologies: JAVA, Oracle, Visual Basic, Visual Basic for Applications, EJB, JSP, HTML, RMI, JNI, C++, C, CORBA, S+, COM, PL/SQL UML, Windows NT, and UNIX shell scripts. Requires Bachelors or equivalent in Computer Science, Engineering, Math, or Physics and three (3) years in job offered OR three (3) years experience architecting, designing, and developing client/server and web based applications. Candidate must also possess demonstrated expertise designing and developing multi-layered, secure Internet and Intranet applications using various combinations of JAVA, EJB, and HTML demonstrated in-depth knowledge in designing and developing n-tier client/server applications using Visual Basic, and database API's, and demonstrated expertise in object-oriented programming environment using third party software components including databases and middleware. Salary: $90,500/yr M-F 9AM-5PM. Send 2 resumes to Case #200202263, Labor Exchange Office 19 Staniford St., 1st fl., Boston, MA 02114. EOE. Applicants must be U.S. workers eligible to accept full-time employment in U.S.

Silicus Technologies, Inc., is a leading business technology, IT systems integration and solutions firm specializes in providing customized business technology solutions and services. Our company currently has openings for the following:

Business Intelligence Lead:

Design business process flow, data models, testing, and software design specifications. Process business reengineering, technical specifications, and develop project plans. Facilitate JAD sessions or GAP analysis sessions with users. Evaluate new business initiatives and implement systems solutions to support them. Design standard practices and procedures. Experience in systems development life cycle methodology using COTS project software, SQL, UML, OO Design principles, J2EE, RDBMS, web development (COM, DCQM), client/server architecture. Need 2 years of experience in related field.

Programmer Analysts:

Plan, test and develop Internet based programs for ERP packages, asset management, sales force automation and E-commerce. Expertise in Integration Technologies in core SAP R/3 includes ITS, EDI, Workflow, Business Connector and Web Application Server. Design and develop client-server applications using RDBMS, VB, ASP, VB script, JavaScript, ADO, IIS, Oracle 8i and AutoCAD. Also utilized Visio, Biztalk, Business Qbjects, web intelligence, Erwin, Toad, and UNIX. Requires Bachelor's degree in Computer Science or Engineering and 2 years of experience.

Send resume to: Recruiter: 1201 N. Orange Street, Suite 7809, Wilmington, DE 19801, or via email to: careers@silicus.com.

Software Engineer (Charlotte, NC) - Part of core development team responsible for research, design, development, testing, documentation and maintenance of Websydian and Clipper web-and DOS based, object-oriented business applications and related computer systems in AS/400 and PC LAN Windows architecture platform. Utilize C++, Java, Visual Basic, FoxPro, COOL Plex and Crystal Report on IBM Universal Database, SOL Server and DB/400. Analyze software requirements to determine feasibility of design. Consult with hardware engineers to evaluate interface between hardware, software, operational and performance requirements of overall system. Must have Bach. deg., or equiv., with major field of study in Comp. Sci., Info. Systems or related field and 4 yrs exp. in job offered, or 4 yrs exp. in a position involving business applications software development. Experience mentioned may have been obtained concurrently and must include: (i) 4 yrs. in object oriented analysis, design and programming in a PC LAN Windows architecture platform; (ii) 4 yrs exp. in COOL Plex; (iii) 4 yrs exp. in design and programming in a AS/400 environment; (iv) 3 yrs exp. each in IBM Universal Database, SQL Server, and DB/400; (v) 3 yrs exp. in Crystal Report Tools; (vi) 2 yrs exp. in web-based software development; (vii) 2 yrs exp. each in C++, Java, Visual Basic, FoxPro and SQL; and (viii) 1 yr exp. each in Websydian and Clipper. Must have legal authority to work in U.S. Please send resume to CT Chu (REF:SE), Caraustar Industries, Inc., 443 South Gardner Ave., Charlotte, NC 28208.

PROGRAMMER ANALYSTS for Naperville, IL office. Develop & maintain software applications using Oracle, SQL Server, Erwin, Linux, Sybase, XML, UML, Interwoven, Coolgen, ClearCase, ClearQuest, Plumtree, PVCS, UNIX. Bachelors Degree reqrd in Computers, Engineering, Math or related field of study + 2yrs of related exp. 40 hrs/wk, Must have legal authority to work permanently in the U.S. Send resume to HR Manager, Globalways, Inc, 39176 B, State St, Fremont, CA 94538.

Product Specialist, Technical Support. Provide hands-on technical support for company prospects and customers via the telephone, such as guidance for installing and using the product, or troubleshooting activities. Stay current with company software functions and features and with altemative products in the markets the company serves. Continuously update information about product performance in customer installations. Support developers using company software by designing programs to demonstrate, test and provide quality assurance. Support customers who use company software developer tools to create custom application or database drivers. Keep up-to-date with versions of supported operating systems, database management systems and network transport protocols. Maintain website. Requirements include a Master's degree or equivalent in Management Science, Information Systems or closely related field. No work experience required. Applicants must have unrestricted authorization to work in the United States. Salary $60,000/year. 40 hours/wk. Respond with two copies of resume to Case #200202721, Labor Exchange Office, 19 Staniford St., 1st Fl., Boston, MA 02114.

Job # SA1. Systems Analyst for integration, design, programming, implementation using Oracle, VB, Active Reports, ASP, JavaScript, HTML, PL/SOL, Toad, SOL Server 2000, & Visual SourceSafe. Modeling using ERWIN/Visio 2000. Data Migration & Warehousing using DTS, SOL, Sagent. Image editing-Adobe Photoshop, HTML-Microsoft .NET framework. BS in Engineering or Science or Related Field + 2 yrs. exp. in Software Consulting. In lieu of degree, employer will accept 5 yrs. of software exp.
Job # CP1. Programmer to plan, design, develop, configure, code, maintain, implement & analyze computer programs/systems. Develop custom designed software solutions for clients. Visit client sites as needed in discovery, testing & implementation phases. MS or equivalent in CS or CIS. Must be proficient in C/C++, Java, Win32 API programming, Crystal Report & Data Encryption/Decryption.
All positions offer comp. salary. Refer to job number & apply to HR, ECS, Inc. 8744 Main Street, # 101, Woodstock, GA 30188 with proof of work authorization.

WEB DEVELOPER - Dvlp customized prgms in Perl, C, C++, Java & SOL in Unix envrmt. Enhance user appeal & utility of customized prgms as well as overall functionality of website. Create Web front-end user interfaces using JavaScript & HTML to new or existing d/bases to make business applics web accessible. Perform ongoing day-to-day operation of the server s/ware incl. maintaining system security, monitoring usage stats & logs, modifying configuration settings & backing up the system. Perform troubleshooting duties when needed & write shell scripts as necessary. Implmt, test & maintain customized s/ware. Reqd Bach in Comp Sci (employer will accept foreign deg equiv) + 2 yrs in job offd or 2 yrs as s/ware developer or programmer. 2 yrs exp in related occupation must incl Perl, C, C++, Java, SOL, HTML & JavaScript. Send resume to J. Feinberg, HR, Info Technologies, Inc, Monmouth Park Corp Ctr 1, 187 Rte 36, Bldg A, Ste 20, W. Long Branch, NJ 07764.

Analyst Programmers

Working with Oracle 10.1/11i throughout the USA. Contact Raretec 128 West Broadway, Oviedo, FL 32765 or Fax to (407) 971-8808.

Computer programer. Up-grading and maintenance of the computer systems, including purchasing of hardware and software. programming, design and implementation Data Base programs using VisualBasic to control menu Designs, cost inventory, payroll, accounts receivable and payable, and employee schedules including the ones to be used by the network. Web design and development. Supervise the implementation of the network of all four restaurants locations with main office. required technical or associate Degree in computer programming or computer information systems. 1 year on the job experience or computer programming experience, which included data base design using visual basic. Foreign degree acceptable. competitive salary. 40 hr/wk. send resume & cover letter documenting minimum qualifications to: Wayne Grimball, la fiesta South Inc., suiteA 6521 Highway 69 south, tuscaloosa, AL 35405, EEO.

Systems Analyst - Uses systems to analyze Latin banking systems & business requirements. Design, dev. & program software for integrated banking systems in Latin America Banks & financial institutions. Works w/ IBM, AS/400, RPG, ILE static programming w/ services. Designs teller attention systems incl. (Sarabank, IBS branch) 40 hrs per wk 9AM-6PM. 3 yrs exp. in job offered. Fax resume to Datapro, Inc. Attn: William Montiel Case # 03-1308 (305) 377-3282.

Developer to develop a robust BPMS (Business Process Management Software) on J2EE platform using JDBC compliant database. Write programs using Microsoft SQL Server 2000/7.0, MySQL, PostgreSQL on Windows and Linux platforms. Utilize HTML, ASP, JavaScript, templates, velocity and Jetspeed. Familiarity with Internet Information Servers. Use Photoshop & Illustrator for front-end graphics. Use UML for application modeling and LDAP for Active Directory Services. Salary as per prevailing wages. BS in Computer Science. Plus training in Appstream software. Apply: Open Systems, 4005 Windward Pl., # 550, Alpharetta, GA 30005 with proof of permanent work authorization.

Portal Content Analyst - Responsible for analyzing, evaluating and developing content for Spanish portal (website) of BellSouth.net. Master's degree in Computer Science, Computer Information Systems or related field required and one year experience in systems and web content analysis OR Bachelor's degree in stated fields and three years' of stated experience. Must be fluent in Spanish. Please forward resume to Attn: Lisa Burlingame, BellSouth, 2247 Northlake Parkway, Suite 800, Tucker, Georgia 30084. Please do not email or fax resumes. EQE.

Sr. SW (Test) Engr.- As member of SW testing team, test & develop test automation SW. Participate in design & code reviews. Write test plans according to system reqs. Mntn. exist'g test plans & automated test scripts. Test telecom products. Support pot'l customers during lab trials. Must have B.S. in Comp. Eng'g/Sci., E.E. or equiv + 3yrs. exp. in the job offered or 3 yrs exp. w/ SW testing for the telecom industry, including detailed knowledge of telecom protocols, general telecom procedures & TCL scripting 40 hrs/wk; Salary: $92,833/yr. Send 2 copies of resume to: Case #200201705, Labor Exchange Office, 19 Staniford St 1st Fl, Boston MA 02114

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COMPUTER PROGRAMMER wanted by software/hardware consultants in Houston, TX. Must have degree in Comp. Sc. & exp. Respond by resume only to: Mr. Fred Vakili, President N/T #10. P.C. Vision, Inc. 6220 Westpark, Ste 101, Houston, TX 77057.

Junior Programmer. Assist in design, developing, testing & implementing of software using J2EE, Jetspeed, UML, JSP, Turbine, velocity, postgres, SQL, Java Beans, XML, XSL, Eclipse, JDBC, JTogether 5.5 & C++. Req: BS in Comp. Sci./Eng. or Elec. Eng. 40 hr-wk. Job/Interview Site: Redondo Beach, CA. Send resume to Philosopher's Stone Solutions, LLC., 1874 S. Pacific Coast Hwy., # 722, Redondo Beach, CA 90277.

SYSTEMS ANALYST

Analyzes user requirements, procedures and problems to automate processing or to existing computer systems. Bachelor's degree in computer science, engineering or math-related and 2 yrs. exp. UNIX and AS/400 operating systems, MF COBOL, RPG 3, COBOL/400, CL/400 languages. Must be able to travel.

Apply by resume only to Murali K Suddala, Capricorn Systems Inc. 3569 Habersham-at - Northlake, Building K, Tucker, GA 30084.

Golden Way Security is hiring IT professionals to handle software and computer issues in mortgage areas including web-based application design. BS with some experience are the minimum requirement. Please send resumes to 28125 W. Seven Mile Rd., Livonia, MI 42152.

Programmer Analyst & Statistician wanted by Biopharmaceutical Research Consultant, Inc. (BRCI). Duties include SAS/statistical programming, database creation. Minimum requirement is BS with exp in related field. Send resumes to 6869 Marshall Road, Dexter, MI 48130. EOE.

Software Engineer. Works under the supervision of sr. mgmt to research/develop math. algorithms for image processing complex graphics SW & implement using C++/OOP on Windows/Macintosh; design/implement based on TCP/IP; determine time/cost feasibility; develop req'ts; develop/implement SW testing, programming, documentation/installation. Req. Bach. in Engineering, Comp. Sci., rel./equiv. & 1 yr. exp. Resume to J. Miranda, Deneba Software, Inc., 1150 NW 72nd Ave., Penthouse, Miami, FL, 33126. No calls.

Analytical Design Service Corp (ADSC) is looking for system/programmer analysts. Duties include web application, web graphic design, database in accounting/HR fields. Must have IT exp. using HTML, Flash & fireworks. Please send resumes to resumes@adsc-usa.com. EOE.

Software engineer and system analyst wanted by Hawaii Village Computers to develop special software Lawn Assistance III. Experience in FoxPro, SQL, Mapping software is required, familiar with Lawn Care industry. Minimum BS degree. Apply at realgreen@realgreen.com.

Cityon Systems, Inc., a s/ware consulting co. seeks to fill the position of Computer/Quality Assurance in Chicago, IL and unanticipated locs in US. Must have BS & 4 yrs s/ware exp. Respond by resume to Attn: HR Dept.; Cityon Systems, Inc., 2000 North Central Expressway, Plano, TX 75074.

Programmer

Develop customized IT solutions based on a client's needs and business environment. Must have a Bachelors Degree in CS or Engineering and 2 yrs. of exp. or 2 yrs. of exp. in a related position w/ability to use: Visual Basic, JavaScript, SQL Server.

Must be willing to re-locate. 40hrs./wk, 9AM-6PM.

Applicants send cover letter and resume to: Cyber Korp, Inc., 400 West Lake Street, Suite 216, Roselle, IL 60172, ATTN: HR Mgr.

Seeking qualified applicants for the following positions in Memphis/Collierville, TN: Senior Programmer Analyst. Formulate/define functional requirements and documentation based on accepted user criteria. Requirements: Bachelor's degree or equivalent in computer science, MIS, engineering or related field plus 5 years of experience in systems/applications development. Experience with Java, Unix and SOL programming also required. *Master's degree in appropriate field will offset 2 years of general experience. Submit resumes to Sibi George, FedEx Corporate Services, 1900 Summit Tower Blvd., Suite 1400, Orlando, FL 32810. EOE M/F/D/V.

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The new itcareers.com and CareersJournal.com combined jobs database can help you find one. Check us out! www.itcareers.com

Programmer Analysts to analyze, develop, maintain software appls using Oracle Applications, Oracle, PL/SOL, Dev 2000, etc under Windows/UNIX OS; conduct functional testing and debugging; perform data conversions, customize Forms/Reports using Oracle Applications standards; document, maintain & update development process. Require: BS or foreign equiv. in CS/Engg. (any branch) or related field & 2yrs of exp. in IT. Travel involved. F/T position. Competitive salary. Resume to: HR, Ouest America,Inc., 211 East Ontario Street, Suite 1800, Chicago, IL 60611.

Navision Developer: Develop/program customizations in Microsoft Navision Financial package; design & document user specified solutions; create system & end user utilization reports; manage data conversion (flat files, importation programs, etc.); provide Navision AVISTA customer support; teach development classes; program installation & setup of client/server software on Navision server & SOL server. Req. 4 yrs work exp in job offered or 4 yrs exp in related occupation as Developer or any suitable combo of edu., training, and/or work exp. Send resume to Compusystems of Georgia, Inc., 3805 Crestwood Parkway, Suite 250, Duluth, GA 30096 Ref BN.

Software Engineers to analyze, design, develop/customize business appls using Oracle Fin. and Manuf. Appls, Oracle, SOL, PL/SOL, Dev 2000, Designer 2000 etc. under Windows, UNIX and Sun Solaris envir; interact with end users, gather and document reqs; prioritize functional specs formulated from user reqs; evaluate product functionality and design to assure quality. Require: Masters or foreign equiv. in CS/Engg.(any branch)/Science/Bus. Mgmt. Travel involved. F/T position. Competitive salary. Resume to: HR, Quest America, Inc., 211 East Ontario Street, Suite 1800, Chicago, IL 60611.

Software Engineer (NY NY): Design, develop & administer sales/purchase/inventory system designed for diamond & jewelry industry. Design, code & test complex system components, incl memo system feature & inventory system for precious gems. Develop multi-tier applications using Java and C++. Develop web-based applications and implement client-server technology using Visual Basic. Bachelor's or foreign equiv in Elec Engin, Comm Engin or Comp Info Systems plus 3 yrs exp in job offered. Fax resume to: 212-888-0055.

Senior System Engineer: Perform AS-400 administration, including installation, configuration, upgrading, monitoring, backups, and administrative tasks like user creation and security clearance. Install Tivoli monitoring system in all servers in the company's North and Latin America offices in different platforms and configure and maintain them. Responsible for the backups of all the servers in the US data center (using Tivoli Storage Manager). Responsible for maintaining the Data Center in company's Puerto Rico office. Requirements include a Bachelor's degree or equivalent combination of education and work experience in Information Science, Computer Science or related field and two years of pre-or post-degree work experience in the job offered or related field of system engineering and support. Applicants must have unrestricted authorization to work in the United States. Salary $74,200/year. 40 hours/wk. Respond with two copies of resume to Case #200202625, Labor Exchange Office, 19 Staniford St., 1st Fl., Boston, MA 02114.

Computer/Info. Systems

Information Systems Professionals

To participate in analysis, problem solving, project design and technical implementation for major projects, mentor junior level consultants. Participate in the timely and high quality delivery of product; implementation, integration, design, coding, testing and documentation of custom application software; evaluate user requirements and consult with design team to identify current procedures and needs; support and train end-users. Technologies/Platforms used include UNIX, Windows NT, SQL Server, or Oracle using SOL, C/C++, Visual Basic, Java, Cobol and other appropriate programming languages in Client/Server, Network and Mainframe environments. Must have a Bachelors degree, or its equivalent, and 3 yrs. professional experience. Send resume to: Human Resources, Knightsbridge Solutions, 500 W. Madison Ave., Suite 3100, Chicago, IL 60661. EOE

MagnaQuest, Inc. delivers end-to-end customer-centric IT solutions. We are looking for the following position.

Programmer Analysts: Design, develop and test Internet based programs for EBPP packages, Electronic Billing Presentation and Payment. Design client-server applications using JAVA, EJB, NetDynamics and Oracle. Interact with clients to design the functions of software according to client specifications using Unix, C++, Corba, XML, UML, WEBLOGIC 7, testing tools. Requires Bachelor's degree in Computer Science or Engineering and 2+ years of experience.

Send resume to: Human Resources, MagnaQuest, Inc., 16219 S. 31st Way, Phoenix, AZ 85048. E-mail: mqusa@magnaquest.net.

Consultant sought by NYC Computer consulting firm to analyze user needs, to dsgn, dvlp & implmt medium to large scale applics using technologies such as Java, HTML/DHTML, Oracle, Win 2000/NT95, Unix, Unix Shell Scripts, Oracle, Beantest, Rational Purify, Optimize IT, SQL Navigator, Microsoft Visual Studio. Must have relevant work exp. Send resume to Gemini Systems, HR #CRK, 61 Broadway, Ste 925, NY, NY 10006.

Manhattan Associates, Inc., a worldwide leader in supply chain execution systems is looking for IT professionals to join our team at our Atlanta, GA, Burlington, MA, and Mishawaka, IN locations (Job locations may vary) **Business Analysts**. Logistics domain to analyze document & generalize customer req to create feature sets & enhancements to internet based optimization suite using UML & Transportation Execution & Procurement tech, J@EE, XML, XSLT, CSS iPlanet & CPLEX math & solver libraries. Req BS bus. or equiv. including Stats & Quantitative Meth & 2 yr. as Bus Analyst or Consult, exp. to include bus. modeling, ERP. **Unix Administrators** Unix/Sun Solaris support & admin optimization-based transport decision support sys on Solaris 8, AIX4.3, AIX 5L, HP UX & Win2000 sys using Weblogic, WebMethod, MO Series, RateWare, & PCMILER, w/BigBrother & SiteScope monitoring. Req BS Engg or Comp Sci & 2 yr as Unix Admin or Sys Engg, exp to include admin. Solaris 8, HP-UX, Big Brother, Weblogic & Shell scripting. Resumes to: K. Littleton, Manhattan Associates, 2300 Windy Ridge Pkwy. 7th Fl. N., Atlanta GA 30339.

Software Application Engineer: Perform system analysis, design, programming, testing, implementation and documentation of technical customer engagements. Review site preparation checklists, executing statements of work/activity plan tasks, defining and assessing the need for change requests and coordinating change requests with project managers along with data conversions, form medications and forms development. Requires: Bachelors in Computer Science or the U.S. equivalence and two years experience in Customizing CRM Applications. Must have knowledge of Applix Enterprise, Applix Administration and Crystal Reports. 40hrs/wk (8:00 A.M. to 5:00 P.M.); $70,000.00/yr. Send two resumes/responses to: Case Number 200202367, Labor Exchange Office, 19 Staniford Street, 1st Floor, Boston, MA 02114.

Actual Systems of America seeks applicants for the position of Computer Programmer in Aurora, CO to, using FoxPro and C language under Unix and SQL Server databases, work on development projects and software enhancements for a software used by the auto recycling industry. Requirements for this position include a bachelor's degree in computer science or electronic engineering and 2 yrs. exp. as a programmer using FoxPro 2.6. Requirements also include working knowledge of Unix, Windows CE, SQL Server, Embedded Visual Basic and C language under a Unix operating system. Respond by resume only to HR, Actual Systems of America, 14231 E. 4th Ave., #101, Aurora, CO 80011. No phone calls.

Seeking qualified applicants for the following positions in Memphis, TN Senior MIS Analyst. Provide project leadership in the analysis, design, development and management of databases and reporting tools to support customer service computer systems/applications. Requirements. Bachelor's degree* or equivalent in computer science, math, business or related field plus 5 years of experience in business analysis, computer modeling, simulation and/or MIS system development. Experience with SAS; Access; and either Sybase or PowerBuilder also required *Master's degree in appropriate field will offset 2 years of general experience. Submit resumes to Mike Feehan, Federal Express Corporation, 3796 Lamar Avenue, 3rd Floor, Memphis, TN 38118 EOE M/F/D/V.

Igenesis delivers innovative IT solutions to business clients nationwide We have immediate full time opportunities for Software Engineers & Programmers

We are seeking candidates with experience in design, development, implementation and maintenance of financial systems applications Manage & architect a solution that integrates the clients information systems using PowerBuilder, PFC, PFC Tool, Web Datawindow, PowerDynamo, Jaguar, Corner Stone, PowerDesigner, Java, UML Design, Coldfusion, Javascripts, Html, Clearcase, Crystal reports, RCS Communication, Control-M, Perl, Shell Scripting, SOL-Server and Oracle on a Unix/Windows operating system.

Require experience in preparing functional requirements, design specifications & generating reports.

Seeking dependable and Total Quality customer service oriented candidates for the positions. Require Bachelor's degree in Computer Science, Engineering or related field is required + 3 yrs of experience in the job offered or 3 yrs as a Software Developer. Job involves frequent traveling as required by the project. We offer excellent salary & benefits package for 40 hrs/wk, 8:00 to 5:00 p.m. Send resume to: Igenesis, 942 Parkton Drive, Waukesha, WI 53189 or job41903@igenesisonline.com.

Voicecom Telecommunications, LLC seeks a Sr. Director of Network Operations to direct and manage an integrated Network Control Center and Field Operations Team, which supports Voicecom's nationwide IP, Voice and Data Telecommunications. Responsibilities include advanced level network engineering and maintenance support, direct and manage a team of managers, engineers, technicians and field operations. Manage extensive voice, data and IP networks to include IVR, PBX, VoIP, Voice Messaging systems, Clear Channel, Channelized, Fractional, DSI, DS3, SONET, DWDM, ATM, SMDS, Frame Relay, SMTP, IITTP, TELNET, TRACEROUTE, PING, BGP, ISIS, Static, Multicast, "MPLS VPN", IS-IS metrics, DMS Switching, Voice Trunks, DID & 800 Services.
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BackSpin Mark Gibbs

Salute the defenders of profit

Atten-shun! General Gibbs here. Right chaps, we're going back into battle shortly, but first a few words about the war.

We know what our job is: We're defending our networks from virus writers, hackers, dishonest employees, flaky equipment and bug-ridden software — an enemy army of such size that just a few years ago it would have been hard to imagine.

And it is getting worse. Things that we never thought would be a threat are being turned against us. This spam battle has escalated from a low-level nuisance to a strategic confrontation. The bad guys are rolling out new tactics pretty much every day while we rearrange our defenses — the anti-spam filters — because without a real push to shore up the messaging beachhead the signal-to-noise ratio will plummet until e-mail becomes useless.

But that, men, is not even scratching the surface, because an increasingly significant threat is coming from a largely unexpected source: what the good guys can do to you.

E-commerce has an interesting tendency to change the way business is done, making, for example, constant monitoring of another organization's Web site data highly desirable. Great for the outfit doing the monitoring but lousy for the monitoree, particularly when many companies are monitoring them simultaneously. The constant access can create a phenomenal drain on resources.

A great example is the "bot" problem that plagues big search engines. For many organizations search engines are key components of their online marketing strategies — the reason being that if they appear in the search results for a specific term that relates to their products then the chances of someone spending money is vastly improved.

What these organizations care about is not just being on the results list but being first or as close to first as possible. Not high enough? Then they tweak their metatags and keywords and try to get lots of other sites to link to them. Then they go back to the search engines ater to check their rank.

The problem is it's labor-intensive to check all the search engines repeatedly, so companies started to build "bots" — robots that search on their behalf.

As a result, the search engines experienced scores, then hundreds, of bots accessing them as everyone started to play the game. The search engines consequently started blocking the IP addresses of bots.

As a result the bots were re-engineered to behave more human-like so that the search engine people had to start getting really clever with their detection systems so the bots, then ... well, you get the idea.

Unlike in the real world, skirmishes that involve network access and resources are to all intents and purposes capable of endless escalation. The only constraints are the intervention of network administrators, the size of the data pipes, the speed of the routers and the power of the processors. Unfortunately, all those factors except your effort grow according to Moore's Law. Thus we are condemned to endless conflict.

Given that our battles are predicated upon the complexity, power and richness of our networks, can we aim for simplicity to help solve the problem? Probably not. Our networks are the way they are for a reason — to solve business problems, and most business problems are hard to strip down.

But there is a simple answer: We need more IT people — an army of them. Businesses that intend to be competitive can't operate with the tiny IT groups most of them have, because the IT guys are all that stand between profitable information-driven businesses and money-hemorrhaging chaos.

So, ladies and gentlemen of the IT brigade, start telling your company which way things are headed and what it will mean. Start building the case to make IT the defenders of profit.

That's it chaps, we've got a war to fight. Get ready ... charge!

Battle plans to backspin@gibbs.com.

'NetBuzz News, insights, opinions and oddities

By Paul McNamara

Talk about your crowded markets

The question first sat up and begged when an executive from an anti-spam start-up told me he had counted 400 competing products and services — from the slick to the amateurish — before deciding that he had counted enough.

And the same question fairly screamed at me one day recently when I received three separate story pitches from yet three more anti-spam start-ups, none of which had previously registered on my anti-spam radar screen. (That monitor looks like one of those air-traffic controller panels you see in the movie "Pushing Tin," just before the guy juggling all the planes goes bonkers.)

The question is, how can any anti-spam vendor hope to get enough attention from the press and potential customers to survive the bloody shakeout that's coming soon to this market?

I asked Roger Matus, CEO of Audiotrieve, which recently launched InBoxer for Outlook. InBoxer is an anti-spam client application — server version coming later this year — that's based on Bayesian mathematics and built by a group of Dragon Systems expatriates who weren't even thinking about spam when they started the company. Just to be mean, I told Matus about the other fellow giving up on his count after No. 400.

"That scares the heck out of me," he says.

Not that there was any trembling in his voice. Matus quickly assumed the entrepreneur's classically confident pose: "You don't have to be No. 1 or No. 2 to turn a profit," he says.

But you can't be No. 37 either, and someone out there will be, not to mention the whole pack of nobodies trailing even further.

"There's a low barrier of entry to call yourself an anti-spam product," Matus says. "That does not mean all anti-spam products are created equal."

He's not fond of the rules-based filters or challenge-response systems, which only stands to reason, because InBoxer is neither.

So how exactly does a member of this exceptionally crowded field go about breaking free of the pack?

One way might be to generate oodles of free publicity by getting your little ol' self sued by a big ol' brand-name company. But that ticket's been punched already by Seattle's Spam Arrest, which earlier this month found itself the target of legal action by Hormel, maker of the lunch meat and owner of the Spam trademark. The publicity Spam Arrest is reaping would make a good MasterCard commercial.

As for Audiotrieve and InBoxer, Matus says the company must first leave that blob of 400 behind and earn a spot in the Top 20 through good word of mouth and "influencing the influencers." Then it's an old-fashioned marketing game.

They also need for "people to agree on exactly what they want in a spam filter," he says, because when they do he's confident the consensus will be to InBoxer's benefit. His company believes that false positives are unacceptable, legitimate senders shouldn't have to jump through hoops and that an anti-spam product needs to be able to tell the difference between a welcome message and junk even if they're from the same sender.

He's also realistic about the need for an exit strategy.

"I don't have the false expectation that we're going to be in the anti-spam business in 10 years," he says.

Correction: Wrong number on Infone

Last week's column regarding Infone contained an egregious error about the price that this new information service charges callers.

The correct price is 89 cents — total — for the first 15 minutes, plus 5 cents per minute thereafter.

My apologies to Infone. And my thanks to all who wrote to point out the mistake without calling me any names.

If you do want to call me names, the address is buzz@nww.com.

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